PLAN
South Boston
Dorchester Ave

TRANSPORTATION PLAN
EXISTING CONDITIONS REPORT

CITY OF BOSTON
Martin J. Walsh, Mayor

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ACKNOWLEDGEMENTS

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1 Introduction

The PLAN: South Boston Dorchester Avenue Transportation Plan (referred to in this document as the Dorchester Avenue Transportation Plan) builds on the Boston Planning & Development Agency's (BPDA) 2016 *PLAN: South Boston Dorchester Ave* neighborhood planning initiative (referred to as the PLAN). The 2016 PLAN envisioned a mixed-use neighborhood to the east and west of Dorchester Avenue between the Broadway and Andrew Square MBTA Red Line stations. The 2016 PLAN included four key components:

- Land Use & Open Space
- Housing & Economic Development
- Mobility & Connectivity
- Placemaking & Neighborhood Character

The PLAN provided a vision, principles and strategies to ensure strong neighborhood mobility and connectivity. Among the recommendations were a new street network integrated into existing rights of way; pedestrian and bicycle connections; and general improvements to transit access and connectivity. Given immediate interests in the project area from the development community, the BPDA recognized the need for a more robust and detailed transportation analysis and strategy to confirm that the future multimodal network laid out in the PLAN would be able to meet demand resulting from expected new mixed-use development in a manner that minimizes impacts on the larger South Boston neighborhood.

Purpose of this Report

The purpose of this existing conditions report is to provide BPDA and PLAN stakeholders with an overview of all current transportation infrastructure and service conditions that affect the movement of people, goods and services within, to, from and through the Study Area. As such, the existing conditions analysis is organized into sections by transportation mode. This analysis is important in that it establishes how the transportation network in the Study Area is being used today, including opportunities and deficiencies, so that the team can maintain or mitigate these conditions in future project phases. Sections include:

1) **Roadway and Traffic** provides specifics about existing roadway geometries and traffic conditions on key routes and intersections within and near the Study Area.
2) **Safety** examines existing safety concerns in the Study Area through a review of crash histories, identifying hot spots and contributing factors.
3) **Transit** describes and assesses current transit services provided within the Study Area including the MBTA Red Line and multiple MBTA bus routes, as well as other transit services and facilities within and adjacent to the Study Area.

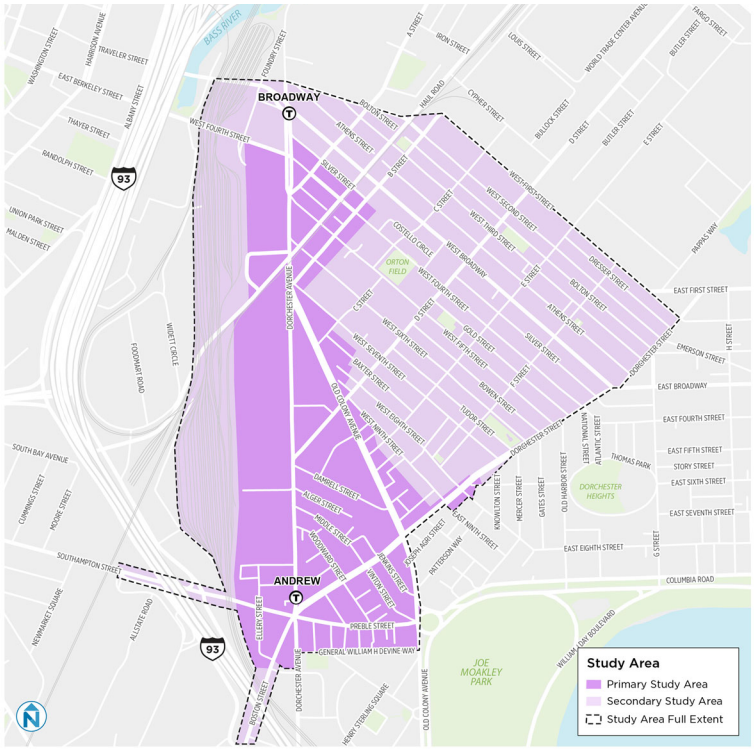
4) **Pedestrian** describes the infrastructure impacting walkability in the Study Area including sidewalk and Americans with Disabilities Act (ADA) conditions and deficiencies.
5) **Bicycle** describes existing bicycle conditions and usage within the Study Area, and connections to the citywide bike network.
6) **Parking** provides an overview of parking conditions in the Study Area including current regulations, inventory and demand, and an overview of the South Boston Parking Freeze (i.e., the cap on spaces allowed).
7) **Resiliency** assesses the vulnerability of the Study Area's transportation network and key assets to climate change, particularly related to flooding and heat island impacts and more.

Study Area

The existing conditions analysis identifies a Primary and a Secondary Study Area as detailed in Figure 1-1 and described below:

- The **Primary Study Area (Study Area)** includes the 144 acres (mostly privately owned) in the area roughly bounded by West Fourth and Silver streets to the north (near the Broadway MBTA Red Line station), the rail yards to the west, General William Devine Way to the south, and Old Colony Avenue and B Street to the east.

Figure 1-1 Study Area



- The **Secondary Study Area (Secondary Study Area)** extends northward to Traveler and East 2nd Street, west to the Southeast Expressway, and east to West First and Dorchester Street, with the south boundary the same as in the Primary Study Area.

The bulk of the existing conditions analysis was performed for the Primary Study Area (the area outlined in dark purple in Figure 1-1), as this is where most transportation initiatives and projects to result from the PLAN will occur. The Secondary Study Area (outlined in light purple in Figure 1-1) was established because it is the area – outside of the Primary Study area – most likely affected by transportation impacts from future conditions.

PROJECT HISTORY AND CONTEXT

The Dorchester Ave Transportation Plan was initiated as a key recommendation in response to the 2016 PLAN. The 2016 PLAN was undertaken in response to increasing market pressures for new transit-oriented residential and mixed-use development along Dorchester Avenue between the Broadway and Andrew Square MBTA Red Line stations, and the loss of jobs in what has historically been home to manufacturing, industrial, and commercial businesses and land uses.

The PLAN calls for up to 12 to 16 million square feet of new mixed-use development within the Primary Study Area over the next 20 years. This new development brings people – thousands of residents, workers, and visitors each day – who will all need to move about the area by foot, bicycle, bus, train, scooter, car, other mobility device, and in many cases, a combination of two or more. The potential impacts from these new users on the existing and future transportation network in the Study Area, and in the surrounding neighborhood, were identified as a key challenge by the City and many stakeholders. As such, a primary component of the PLAN was a people-centric public realm supported by a new street grid offering strong internal circulation and connections to existing roadway networks and improved transit services. The intent of this network is to provide multimodal options for people to move to, from, within, and through the area.

The PLAN organized all its transportation recommendations and network improvements by mode, including:

1) Streets
2) Pedestrian
3) Bicycle
4) Transit
5) Vehicular
6) Parking

Other recommendations included a potential Transportation Management Association (TMA) to coordinate Transportation Demand Management (TDM) services to encourage mode shift from cars to walking, bicycling, transit, and more. The full list of recommendations is provided in Figure 1-2.

Figure 1-2 PLAN South Boston Dot Ave Mobility and Connectivity Recommendations

TOPICS	TIME FRAME	RESPONSIBILITY	STRATEGY
Multimodal Network			
As redevelopment occurs, ensure that new streets form a dense, walkable, bikeable, human-scaled network between Old Colony Ave and Dorchester Ave.	Medium, Long	BPDA, BTD, PWD	G
In conjunction with new development, plan for a connected grid of new streets to create a dense, walkable, bikeable, human-scaled network west of Dorchester Ave.	Medium, Long	BPDA, BTD, PWD	G
Apply the City's Complete Streets guidelines to all new streets in the district.	Medium, Long	BPDA, BTD	P
As opportunities arise through new development, make changes to existing streets throughout the network according to the City's Complete Streets guidelines, so they are safer and more pedestrian and bicycle friendly.	Short, Medium	BTD, PWD	P
Define setbacks to accommodate Complete-Street improvements for all major roads in the new district.	Short	BPDA	P
Support and provide the ability for protected cycle tracks on Old Colony Ave continuing on to Dorchester Ave connecting Moakley Park to South Bay Harbor Trail.	Medium	BTD, PWD	G
Support and provide the ability for bicycle accommodations throughout the Study Area and create protected cycle tracks on major corridors.	Medium, Long	BPDA, BTD, PWD	P
Explore the creation of geometric and safety improvements for all users at the intersection of Old Colony Ave and Dorchester Ave, particularly for pedestrians and cyclists.	Medium	BTD, PWD	G
Explore improved safety options for all users at Andrew Square, particularly for pedestrians and cyclists.	Medium	BTD, PWD	G
Pursue improved ADA access and improved pedestrian and bicycle connections on both sides of the Dorchester Avenue Bridge over the Bypass Road.	Medium	MassDOT, BTD, PWD	G

TOPICS	TIME FRAME	RESPONSIBILITY	STRATEGY
Where appropriate, explore the possibility of raised intersections.	Medium	BPDA, BTD, PWD	P
Pursue improved pedestrian and bicycle conditions on Southampton Street Bridge, 4th Street Bridge, D Street, Broadway Bridge, Broadway, and Boston Street.	Medium	BTD, PWD, MassDOT	G
Improve multimodal connectivity to Summer Street/downtown by continuing to work with MassDOT on the reopening of Dorchester Ave between the Post Office and Fort Point Channel.	Underway	BTD, PWD, MassDOT, USPS	G
Pursue improved pedestrian and bicycle connections across Old Colony, Broadway, Dorchester Ave, Dorchester St and Moakley Circle.	Medium	BTD, PWD, MassDOT, DCR	G
Where appropriate, explore the possibility of protected intersections for pedestrians and cyclists.	Medium	BTD, PWD	G
Use best practices for bicycle lane planning and design employed at both City and state levels	Short, Medium	BTD, PWD, MassDOT	P
Support improved multi-modal connections along Southampton/Preble Streets per City GreenLinks program recommendation.	Underway	BTD, PWD	P
Conduct a comprehensive transportation analysis by hiring a consultant to study transportation issues, and identify mobility needs within & connectivity beyond the area for all travel modes.	Short	BPDA, BTD, MBTA	G
In line with Vision Zero and Complete Streets policies, explore possible traffic calming measures to manage vehicular speeds while promoting active transportation.	Underway	BTD, PWD, BPDA	P
Advocate for modernizing and improving capacity and efficiency of MBTA Red Line service.	Underway	MBTA	G
Advocate for the addition of direct, frequent public transit service to Waterfront from new district along D Street and/or within South Boston Bypass Road corridor.	Medium	MBTA, BTD, MassDOT	G
Advocate for assessment of non-diesel alternatives for all transit modes with a specific	Long	BPDA/BTD/ENV	G

TOPICS	TIME FRAME	RESPONSIBILITY	STRATEGY
recommendation that electric multiple units (EMUs) be evaluated for use on Track 61.			
Advocate for additional mass transit service via Track 61 to create connections to the Waterfront, South End and Back Bay that avoid downtown.	Long	MBTA, MassDOT	G
Explore opportunities for extending or adding service to existing bus routes throughout the Study Area, either along Dorchester Ave or one of the new north-south roads.	Underway	MBTA, BTD, BPDA	G
Explore potential corridors for exclusive bus lanes, transit signal priority, and queue-jump lanes as mobility needs evolve; examples include north-south corridors such as Dorchester Ave, and corridors to the Waterfront. One short-term option could be along the Track 61/South Boston Bypass Road corridor.	Medium	MBTA, BTD, MassDOT, MassPort	G
Improve access to MBTA Broadway Station. A second headhouse, as far south as possible would help improve access for the new district.	Medium	MBTA, BTD	G
Larger commercial developments should provide transit pass subsidies for employees and residential tenants.	Short	BPDA, BTD	P
Assess and implement public realm improvements to the sidewalk along Dorchester Avenue adjacent to Cabot Yard.	Short, Medium	MBTA/BPDA/BTD	G
Vehicular Network			
As redevelopment occurs, require development teams to construct an appropriate segment of an extended and improved Ellery Street to serve new land uses west of Dorchester Avenue; and serve as an alternative north/south connection that bypasses Andrew Square; explore one-way pair alternatives with Boston Street.	Medium	BPDA, BTD, PWD	G
In conjunction with redevelopment, pursue the realignment of D Street with Dorchester Ave to facilitate improved intersection operations. As redevelopment takes place, require development teams to extend D Street west of Dorchester Ave to connect with the envisioned new network.	Medium	BPDA, BTD, PWD	G

TOPICS	TIME FRAME	RESPONSIBILITY	STRATEGY
Provide minimum street lanes necessary to process traffic demand.	Medium	BPDA, BTD	G
Design the street system to encourage regional traffic to utilize regional facilities (i.e. I-93 instead of Dorchester Ave or Old Colony Ave) and limit cut-through traffic on residential neighborhoods.	Medium	BPDA, BTD, MassDOT, DCR	G
Allow for efficient traffic flow as well as moderate speeds to provide a safe, activated and vibrant urban condition by appropriately timing signals.	Medium	BPDA, BTD	P
Shared Transportation			
Determine how privately subsidized transit can be publicly accessible.	Underway	BPDA, BTD	P
Provide on-street parking spaces for car share services by extending the Boston Drives program along Dorchester Ave.	Medium	BTD	P
Create “mobility hubs” at Andrew and Broadway Stations by co-locating bike-share, car-share and shared-van parking spaces adjacent to MBTA headhouses.	Medium	BPDA, BTD, MBTA	G
Provision of Blue Bikes stations by developers, as per City of Boston Bicycle Parking Guidelines. The City will decide on the best location for those stations within and around the Study Area	Short	BPDA, BTD, PWD, Blue Bikes	P
Parking			
Promote shared parking concepts.	Underway	BPDA, BTD	P
Lower parking requirements for large project developments that commit to vehicle trip reduction strategies.	Underway	BPDA, BTD	G
Work within the context of the South Boston Parking Freeze to define parking recommendations and revise regulations within zoning.	Short	BPDA, BTD, ENV	P
Establish a maximum parking ratio of 1.0 space per commercial 1,000 sf for large projects.	Short	BPDA	P
Establish a maximum parking ratio of 1.0 space per residential unit to remain consistent with the South Boston Parking Freeze.	Short	BPDA	P

TOPICS	TIME FRAME	RESPONSIBILITY	STRATEGY
Continue to support the possibility of charging for residential on-street parking permits as a method to limit parking demand and permit misuse.	Underway	BTD	G
Require developments with 20 or more parking spaces that 5% will be equipped with EV charging stations.	Development-Specific	BPDA, BTD	G
Require developers to install EV-ready electrical capacity for at least 15% of spaces, and a minimum of 1 space.	Development-Specific	BPDA, BTD	G
Continue to explore EV charging stations on streets and parking lots throughout the Study Area.	Development-Specific	BPDA, BTD	G
Pursue variable, demand-driven pricing for all public parking.	Short	BTD	G
Continue to explore smart parking sensors for all public parking to provide real time availability information.	Underway	BTD	G
All developers that include parking must include carshare parking spaces. If carshare companies are unable to provide service for these spaces, large developments should provide their own carshare system.	Short	BPDA, BTD	G
Require future developments to separate ("unbundle") the costs of housing and parking spaces.	Development-Specific	BPDA, BTD	P
Require employers who provide free parking to any employees to provide parking cash-out for those who do not want a parking space.	Development-Specific	BPDA, BTD	G
Transportation Management Association			
Explore with the community the creation of a Transportation Management Association (TMA) to provide efficient transportation demand management services.	Medium	BPDA, BTD	G

Source: http://www.bostonplans.org/getattachment/b6ea2e27-08fc-4964-bc4f-3a1af0979237, recommendations table (partial), Pages 168-173.

BPDA = Boston Planning & Development Agency

BTD = Boston Transportation Department

PWD = Boston Public Works Department

MassDOT = Massachusetts Department of Transportation

DCR = Massachusetts Department of Conservation and Recreation

MBTA = Massachusetts Bay Transportation Authority

ENV = Boston Environment Department

G = Guideline recommendation

P = Policy recommendation

HISTORICAL CONTEXT

The Study Area's land use and transportation network – and barriers – largely reflect its historical development patterns. Originally a peninsula bisected by a cow path (today's Broadway) and separated from Boston proper, the area was annexed into the city in 1804 to house Boston's growing population. Soon after, the alphabetical street grid of today was established, the Dorchester Turnpike was constructed (to Milton) largely where Dorchester Avenue is today, and the 4th Street Bridge was completed to provide the growing area's first direct connection to Boston.

Construction of the Old Colony Railroad followed in the mid-1800s, leading to major shifts in how the transportation network was used. With most goods and services now entering the city by rail, and with landfill bringing industry and manufacturing to the area, the turnpike was converted to a public street, and Dorchester Avenue as we know it today was used to move people first by streetcars and later cars. Electrification of the streetcar system later allowed for construction of the Dorchester Tunnel, which extended the Red Line branch to Broadway and Andrew Squares in 1918. Streetcars soon shared road space with private cars and were ultimately retired in favor of buses in the mid-1900s. Highway infrastructure (the Southeast Expressway, I-93) soon followed, and the car became the dominant transportation mode. These changes resulted in the current transportation network in and around the Study Area.

The transportation network is not the only transformation that occurred over this time. Land uses and the economy also changed. With the construction of the Dorchester Turnpike and Old Colony Railroad, manufacturing and industrial business activity flourished in the Study Area.

Many land uses within the Study Area today are remnants of the area's industrial past. However, the transportation infrastructure built to support the past uses is responsible for today's market interest. In particular, the two MBTA Red Line stations, nearby commuter rail access, and bus routes along major regional roadways provide strong transit connectivity between the underdeveloped Study Area parcels and major job centers including Downtown and Kendall Square (via the Red Line), the South Boston Seaport, South Boston, South End, Back Bay, Longwood Medical Center, and more.

2 Existing Land Use Conditions

Current land uses within the Study Area can largely be divided into two categories of uses, commercial/industrial and residential. The City's land use classifications are illustrated as Figure 2-1.

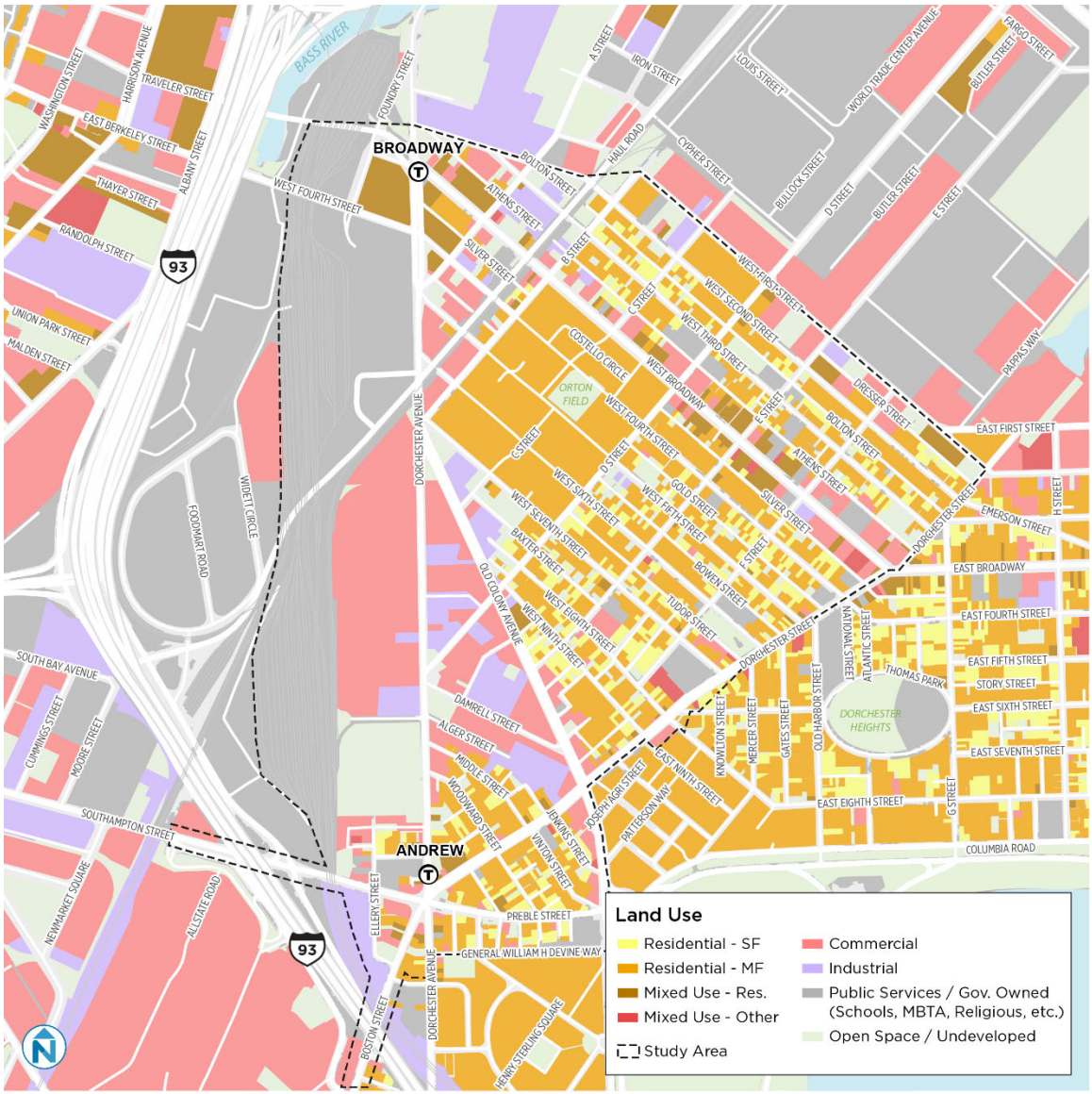
The majority of land uses within the Study Area east and west of Dorchester Avenue are commercial or industrial in nature. Parcels tend to be larger and include one to two story structures housing a range of uses from warehousing to storage facilities, food preparation to fabricators and showrooms to creative office spaces. Other uses include transportation uses and infrastructure, as well as fitness facilities and construction storage.

The northern and southernmost portions of the Study Area surrounding the Andrew and Broadway MBTA Red Line stations tend to be more residential in nature, with new higher density mixed-use residential structures along the major corridors (i.e., Broadway, Dorchester Avenue), and lower density multifamily homes on the side streets. There is little to no public open space in the Study area.

Land uses in the Secondary Study area are primarily lower density multifamily residential, with a mix of uses found along West Broadway.

With the exception of recent higher density development in and around the Broadway MBTA Red Line station, and to a lesser extent Andrew Square, uses proposed in the PLAN are different than those currently in the Study area. Proposed uses are higher intensity mixed use residential, commercial, and what is described as 21st Century Industrial. Based on existing market demands and preliminary development interest, development is likely to include considerable lab and tech office space, creative services, and residential. These changes in land use and intensity will result in a large increase in daily population within the Study Area and put a strain on the existing transportation network.

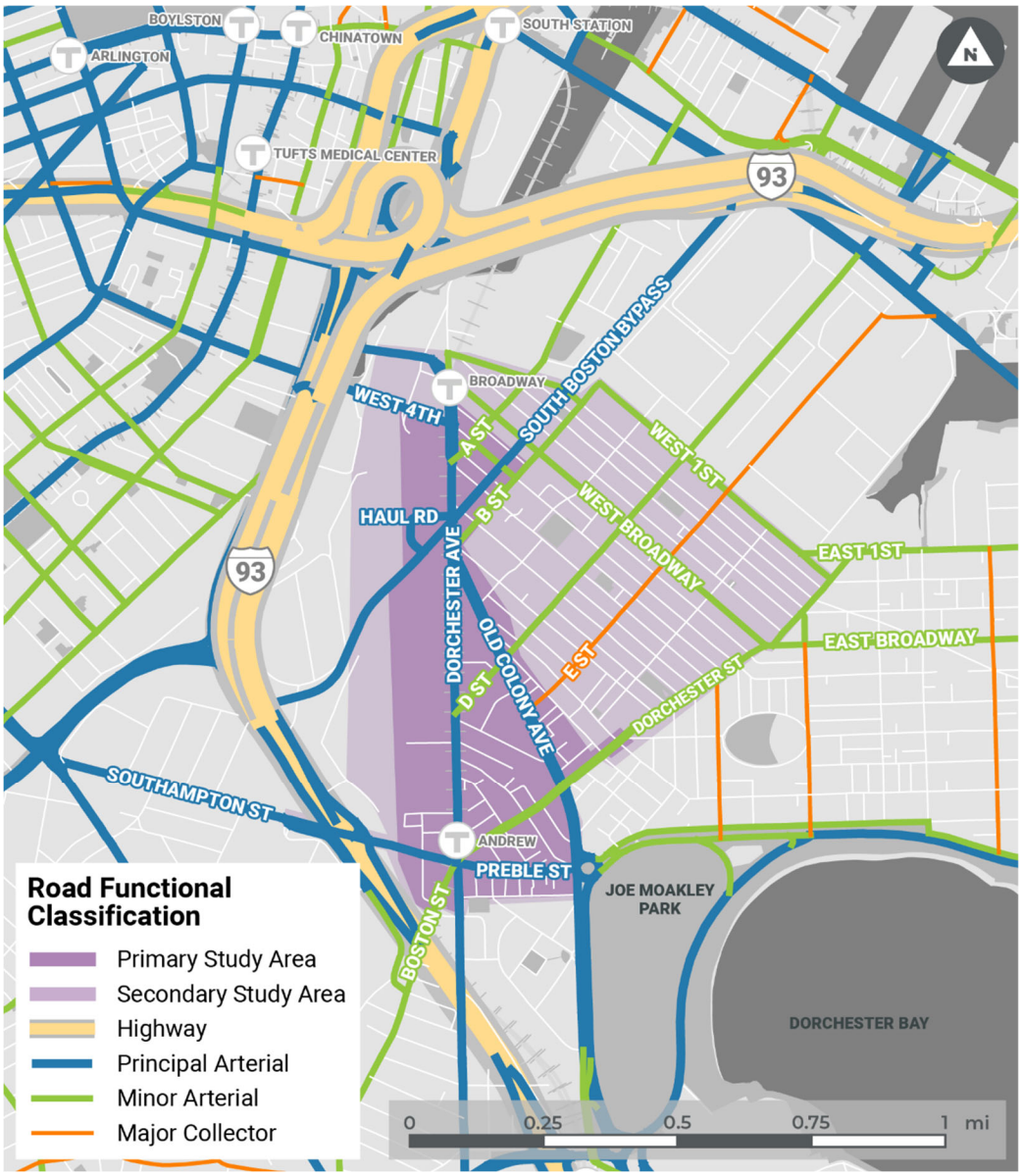
Figure 2-1 Existing Land Use



3 Existing Roadway and Traffic Conditions

The Study Area includes a network of streets, shown in Figure 3-1, which consists of arterials, collectors, and local streets that provide vehicle access to and through the area.

Figure 3-1 Functional Roadway Classifications



MAJOR CORRIDORS IN STUDY AREA

Dorchester Avenue

Dorchester Avenue is an urban principal arterial running in the general north-south direction with a posted speed limit of 25 miles per hour (mph). Within the Study Area, there are two distinct segments divided at the Old Colony Avenue intersection. The segment north of Old Colony Avenue is typically four vehicle travel lanes with inconsistent bicycle lanes. On-street parking is provided on both sides of the street north of Fourth Street. Parking regulations vary, from two hour limited parking near the intersection of Old Colony Avenue, followed by unregulated parking further south. The segment south of Old Colony Avenue is typically two vehicle travel lanes with bicycle lanes in each direction and on-street parking on both sides of the street. This parking is regulated as resident permit parking with a two hour limit for non-permit holders. Sidewalks are present along both sides of the street, typically between 5 and 6 feet wide and of inconsistent quality.

Dorchester Avenue provides an important roadway connection to the Broadway and Andrew MBTA Red Line stations, as well as providing a roadway connection to Downtown Boston. The South Bay Harbor Trail will connect from the West Fourth Street Bridge and north on Dorchester Avenue to the Fort Point Channel Harborwalk, providing a protected bicycle connection from Dorchester Avenue across the Southeast Expressway (I-93) to the South End and Roxbury.

South of Andrew Square, the MBTA Route 18 bus operates service between Andrew Station and Ashmont Station. In the vicinity of Broadway Station, the MBTA Routes 9, 11, and 47 operate with significant bus service in this segment of the corridor.

Old Colony Avenue

Old Colony Avenue is an urban principal arterial running from Dorchester Avenue to Columbia Road, terminating at Kosciuszko Circle outside of the Study Area. Old Colony Avenue within the Study Area is typically four vehicle travel lanes, divided by a flush cobblestone median, with on-street parking on both sides of the street. Parking is unregulated for the majority of the length of the street, with a small portion of resident parking in the southernmost part of the Study Area. Sidewalks are present on both sides of the street, typically between 6 and 8 feet wide in various conditions. No bicycle facilities are present on Old Colony Avenue and no bus routes operate on Old Colony Avenue within the Study Area.

Southampton Street

Within the Study Area, Southampton Street is an urban principal arterial intersecting Dorchester Avenue at Andrew Square, running west. Southampton Street has four vehicle travel lanes, connecting Dorchester Avenue to I-93 via the northbound and southbound I-93 Frontage Road, South Bay Center, and Boston Medical Center. Sidewalks are present on both sides of Southampton Street. There is no on-street parking, nor are there bicycle facilities in

either direction. West of Andrew Square, the MBTA Routes 10, 16, and CT3 bus routes operate on Southampton Street.

Preble Street

Preble Street is an urban principal arterial intersecting Dorchester Avenue at Andrew Square, running east. Preble Street has two vehicle travel lanes, connecting Andrew Square to Joe Moakley Park. On-street parking is allowed on both sides of the street. This is regulated as resident permit parking with a two hour limit for non-permit holders. Sidewalks are present on both sides of Preble Street, approximately 8 feet wide and in mostly good condition. No bicycle facilities are present in either direction, however, the BTD Active Transportation team is working to design cycle facilities for Preble Street. Additionally, the MBTA Route 16 bus operates on Preble Street.

Dorchester Street

Dorchester Street is an urban minor arterial intersecting Dorchester Avenue at Andrew Square and intersecting Old Colony Avenue approximately ¼ mile northeast of Andrew Square. Within the Study Area, Dorchester Street has four vehicle travel lanes, divided by a concrete median. On-street parking is allowed on both sides of the street. This is regulated as resident permit parking with a two hour limit for non-permit holders. Sidewalks on both sides of Dorchester Street are typically 8 to 10 feet wide and in good condition. No bicycle facilities are present in either direction. The MBTA Route 10 operates on Dorchester Street.

D Street

D Street is an urban minor arterial running from Dorchester Avenue into the Seaport. It is one of three roads that connect directly from the Study Area to the Seaport (the other two are A Street and the South Boston Bypass Road). There is currently a “circuit breaker” where D Street is one-way southbound between Old Colony Avenue and West 9th Street. D Street has two vehicle travel lanes with a bicycle lane in the southbound direction and unregulated parking in the northbound direction. Sidewalks are present on both sides of the street, with widths varying from 7 to 8 feet wide and in good condition. No bus services currently operate on D Street within the Study Area.

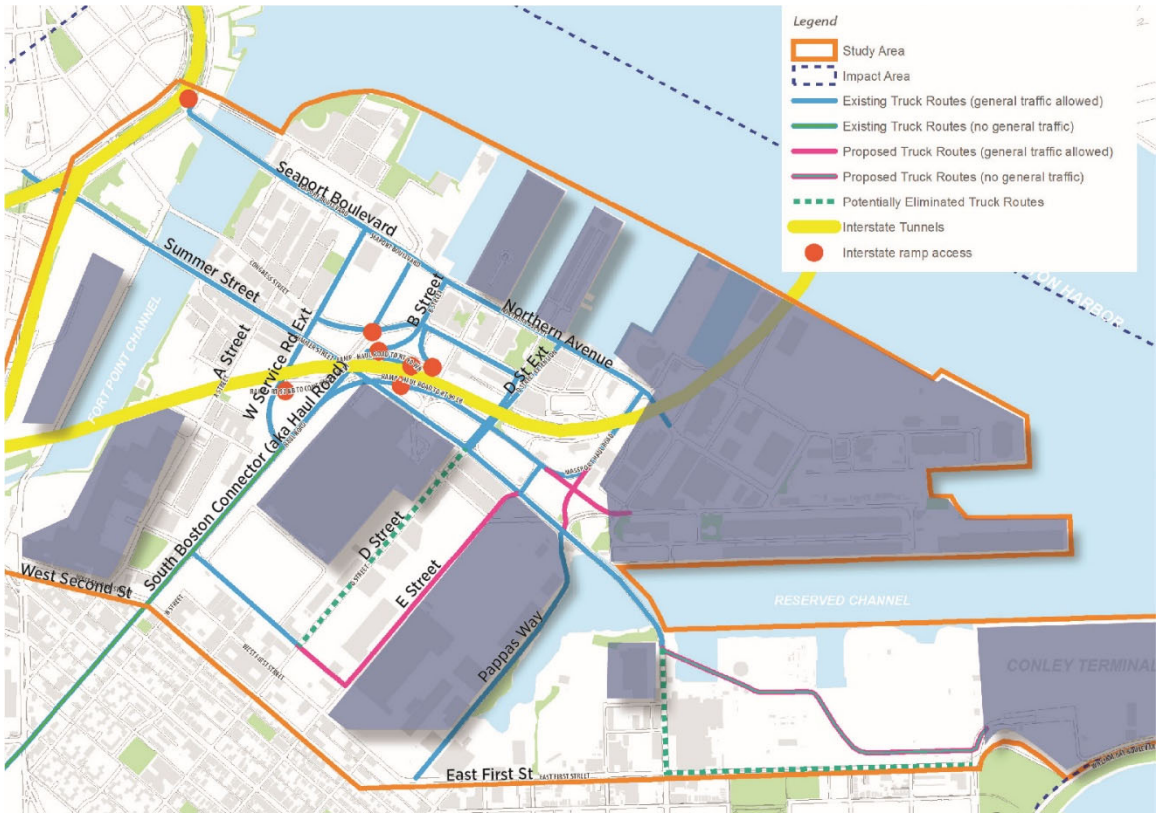
West Broadway and East Broadway

West Broadway is an urban minor arterial that runs from Dorchester Avenue to Dorchester Street, then to Day Boulevard and Castle Island as East Broadway. West Broadway has two vehicle travel lanes and parking on both sides of the street. This parking includes a mix of two hour limited parking and resident permit parking. The MBTA Route 9 bus operates along Broadway. The sidewalks on West Broadway are 12 to 15 feet wide along most of its length and in good condition, however, there are no bicycle facilities. Within the Study Area, the MBTA Routes 9 and 11 operate on West Broadway.

South Boston Bypass

The South Boston Bypass was constructed as part of the Central Artery Project as a limited access freight route to provide dedicated truck access between the South Boston Waterfront and I-93. It is currently closed to all non-commercial traffic between I-93 and the West Service Road, and open to general traffic east of the West Service Road (see Exhibit 5 from *South Boston Waterfront Sustainable Transportation Plan*, 2015).

Figure 3-2 Current and Proposed Truck Routes in the South Boston Waterfront



Source: South Boston Waterfront Sustainable Transportation Plan, 2015, Exhibit 14: Current and Planned Truck Routes in the South Boston Waterfront.

The *South Boston Waterfront Sustainable Transportation Plan* recommended a pilot be conducted to open the South Boston Bypass Road to non-commercial traffic:

- Between I-93 and Richards/Cypher Street in the eastbound direction during the AM peak hour; and
- In both directions at all times east of Richards/Cypher Street.

The goal of this recommendation is to explore ways to minimize traffic impacts to the South Boston neighborhood from development in the South Boston Seaport area while preserving commercial truck access to the waterfront. A pilot opening to non-commercial traffic was conducted for 6 months from August 2015 to February 2016. A monitoring report concluded that volumes increased only marginally on the bypass, with little change on other area

streets. The study author (MassDOT) found the pilot results to be inconclusive, in part due to the short duration of the pilot. A second pilot was conducted from October 15, 2018 to September 30, 2019. As of the time of the publication of this report (March 2020), no data from the second pilot have been released.

Industries and representatives of freight-related activities along the South Boston waterfront have stated opposition to a permanent opening of the bypass to non-commercial traffic.

TRAFFIC VOLUMES

Vehicle volumes along Dorchester Avenue and Old Colony Avenue were obtained from the BPDA and were measured in October 2018 via Video Collection Unit Automatic Traffic Recorders (VCU ATRs). Vehicle speeds and bicycle volume data cannot be collected by VCU ATRs. The Dorchester Avenue vehicle volumes were measured just south of the Golds Gym Driveway. The Old Colony Avenue vehicle volumes were measured just south of C Street. These October 2018 data are summarized in Figure 3-3 below.

Figure 3-3 Automatic Traffic Recorder Data for Dorchester and Old Colony Avenues

	Dorchester Avenue	Old Colony Avenue
Weekday		
Average Daily Traffic (vpd)	10,573	20,292
Heavy Vehicle %	8%	2%
Peak Hour Volume (vphpd)	386	1,224
Directional Split (NB/SB)	53% / 47%	57% / 43%
Weekend		
Average Daily Traffic (vpd)	7,015	14,895
Heavy Vehicle %	10%	3%
Peak Hour Volume (vphpd)	289	912
Directional Split (NB/SB)	59% / 41%	63% / 37%

Source: Traffic counts conducted by Precision Data Industries , October, 2018

On both streets, weekend vehicle volume is significantly lower than weekday vehicle volume. The percent of heavy vehicles as a total of all vehicles is higher on Dorchester Avenue than on Old Colony Avenue given the more industrial nature of the adjacent land uses.

Turning Movements Counts (TMCs)[1] for intersections within the Study Area were obtained from the BTD, measured on Thursday, October 18, 2018. Additional TMCs were collected for intersections outside of the Study Area on December 9, 2019 and January 22, 2020. Turning movement diagrams showing the volumes at each intersection are included in Appendix A.

[1] TMCs were conducted by Precision Data Industries for VHB, and shared with BTD.

Study Area Signalized Intersections Collected by Study Team

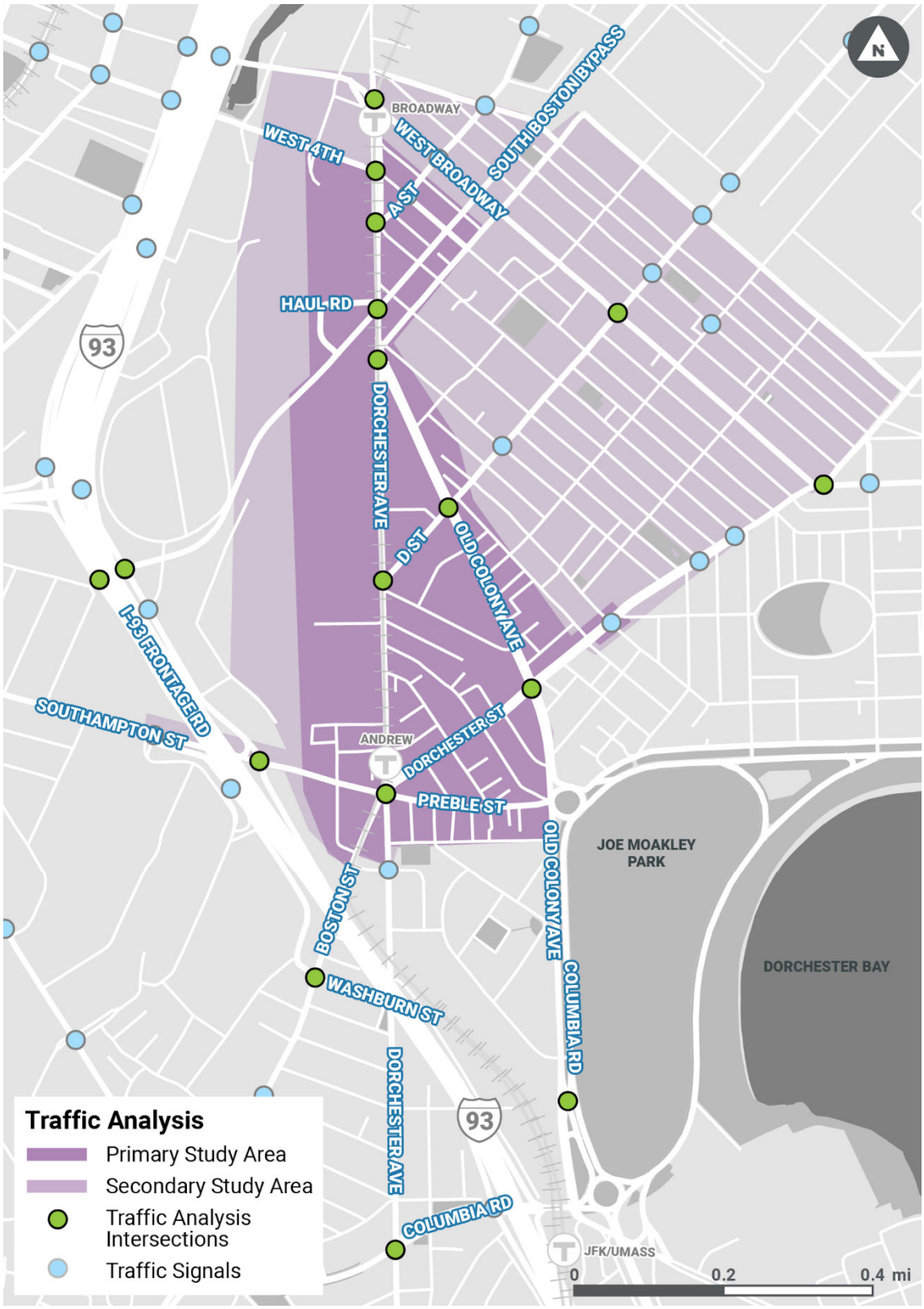
The Study Area signalized intersections have been analyzed for their existing operations using Synchro software, with field observations conducted to verify these analyses.

The traffic signals along Dorchester Avenue between Old Colony Avenue and West Broadway are coordinated with a cycle length of 100 seconds during the morning and evening commuter peaks (6:00 AM – 10:00 AM and 3:00 PM – 7:00 PM, respectively) and 90 seconds at all other times. The signals are programmed to flash between the hours of 3:00 AM and 6:00 AM.

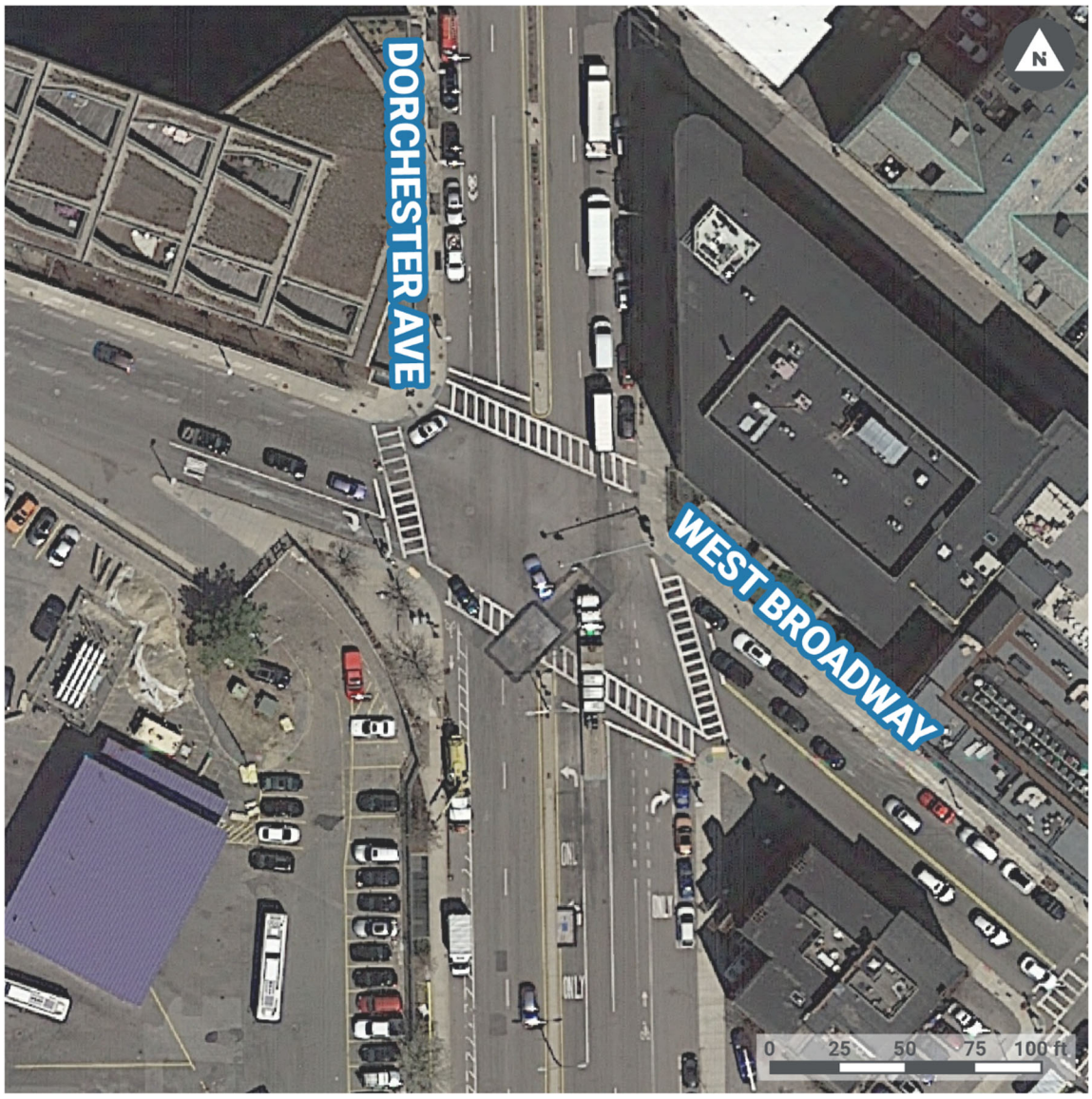
The traffic signals are coordinated along Old Colony Avenue with a cycle length of 100 seconds during the evening commuter peak (2:30 PM – 7:30 PM), and 80 seconds during the morning commuter peak (6:00 AM – 10:30 AM), and 70 seconds at all other times. The signals are programmed to flash between the hours of 3:00 AM and 6:00 AM.

In addition to the signalized intersections within the Study Area, selected intersections have also been analyzed in order to determine the impacts of potential development on adjacent South Boston streets and neighborhoods. These additional intersections are shown outside the Study Area in Figure 3-4 that follows.

Figure 3-4 Signalized Intersections in Vicinity of Study Area



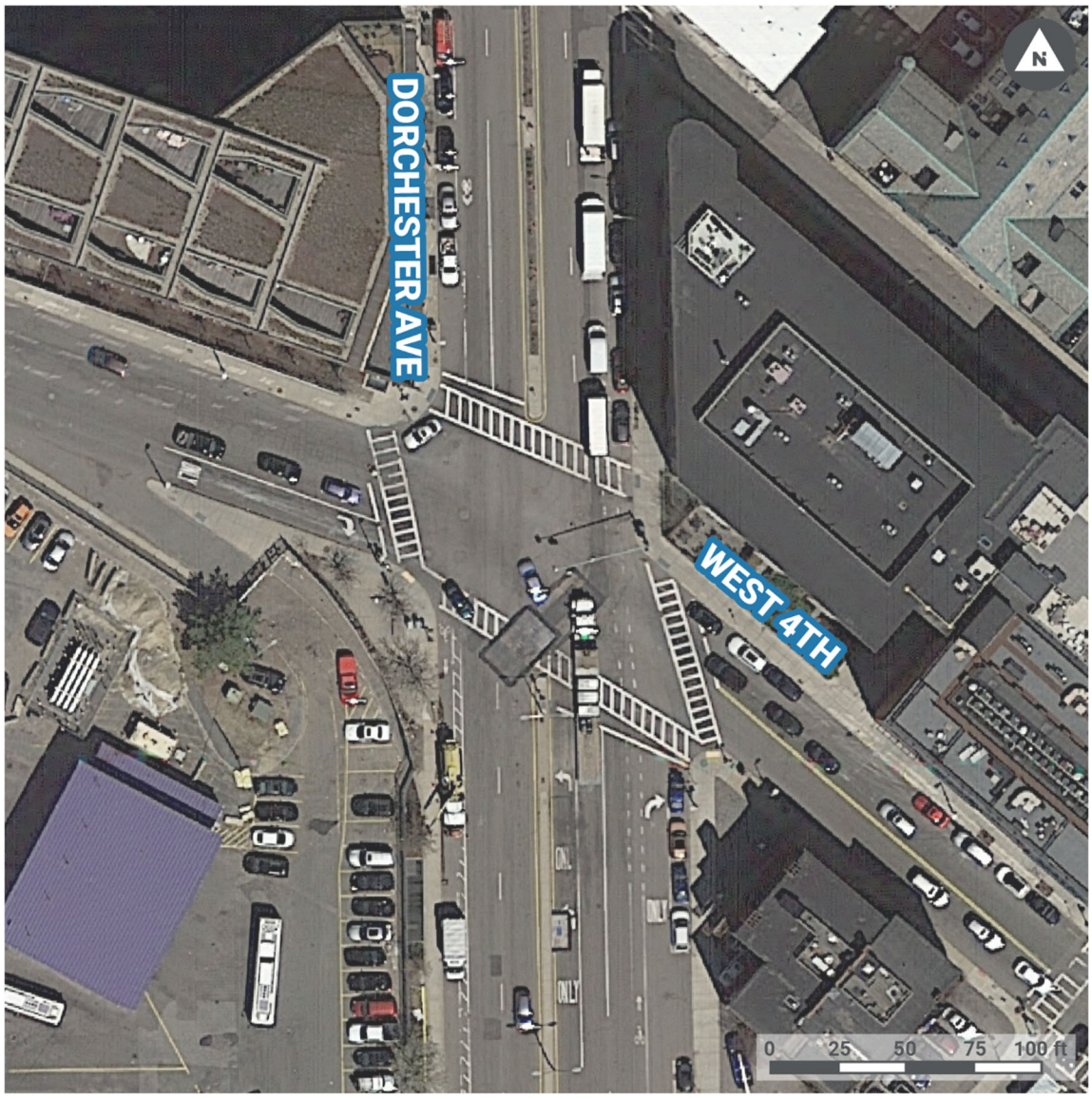
Dorchester Avenue at West Broadway



The intersection of Dorchester Avenue and West Broadway is the northernmost intersection in the Study Area. Just north of this intersection is the United States Postal Service (USPS) Tower 1 Post Office, which restricts access to employees and deliveries only. For this reason, there is a heavy northbound left-turn movement, presumably for drivers trying to go downtown or to I-93 and I-90, particularly in the morning. There is also a heavy eastbound movement towards this intersection, particularly in the evening. Vehicles in the queue generally cleared during the cycle on all approaches. MassDOT, BTD, and MBTA are currently working on improvements at this intersection as a part of the South Bay Harbor Trail project.

Figure 3-5 Vehicles Queueing on the Broadway Bridge Eastbound Approach at Dorchester Avenue during the morning peak hour

Dorchester Avenue at West 4th Street



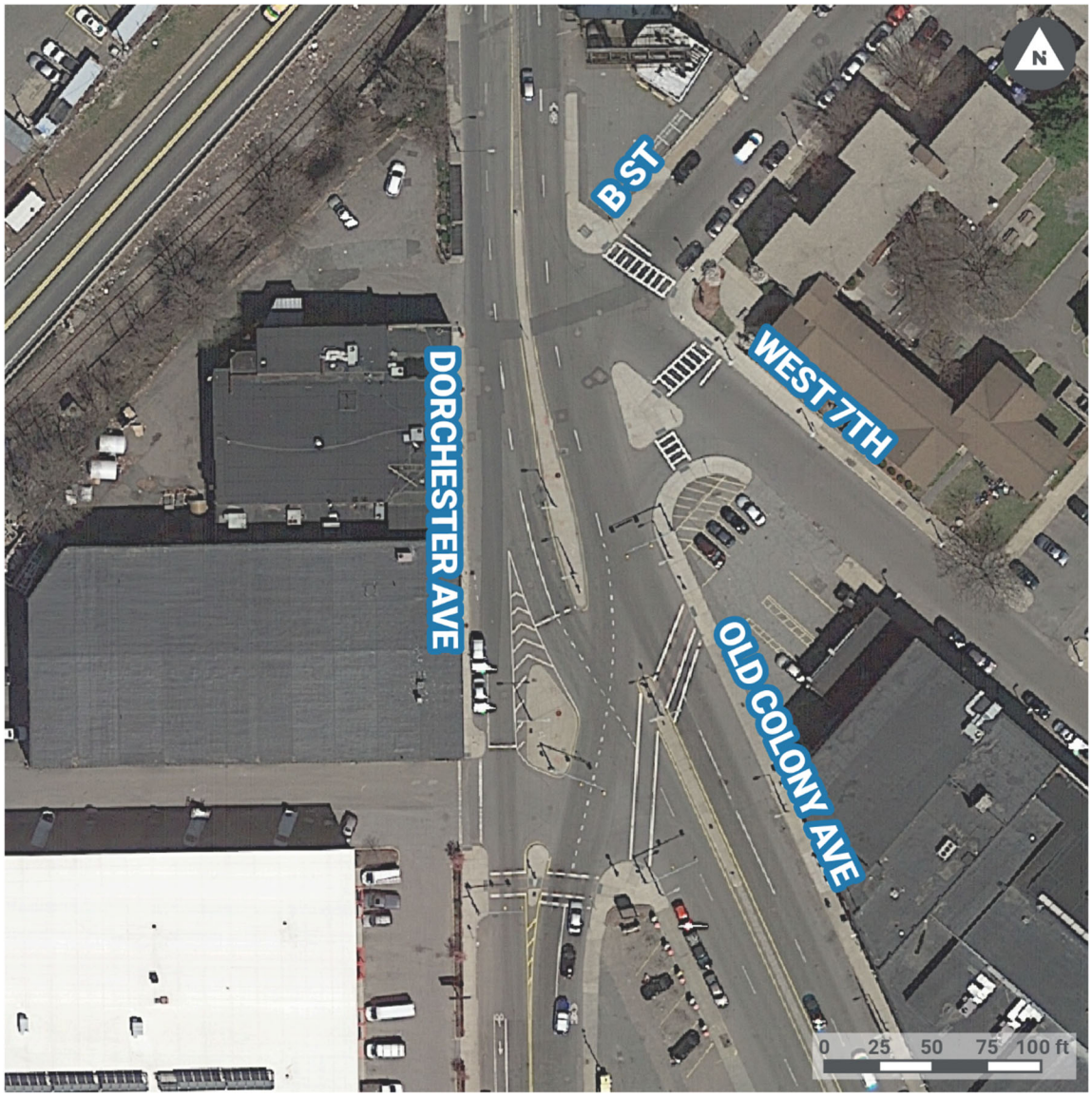
Similar to the West Broadway intersection, the West 4th Street intersection provides a connection from South Boston over the train tracks to I-93 and the Back Bay and South End neighborhoods. The northbound left-turn movement is heavy, particularly in the morning. As seen in Figure 3-6, the southbound leg of Dorchester Avenue was observed to queue back towards the West Broadway intersection in both the morning and evening peaks.

Figure 3-6 Vehicles Queueing on Dorchester Avenue Southbound Approach at West 4th Street during Morning Peak

Dorchester Avenue at A Street/West 5th Street

The intersection of Dorchester Avenue and A Street/West 5th Street is a K-shaped intersection with the West 5th Street approach not part of the signal. West 5th Street operates as a right-in, right-out street due to the median on the Dorchester Avenue northbound approach. The A Street approach experiences high delay during the morning peak due to the heavy northbound volume on Dorchester Avenue, however significant queueing was not observed.

Dorchester Avenue at Old Colony Avenue



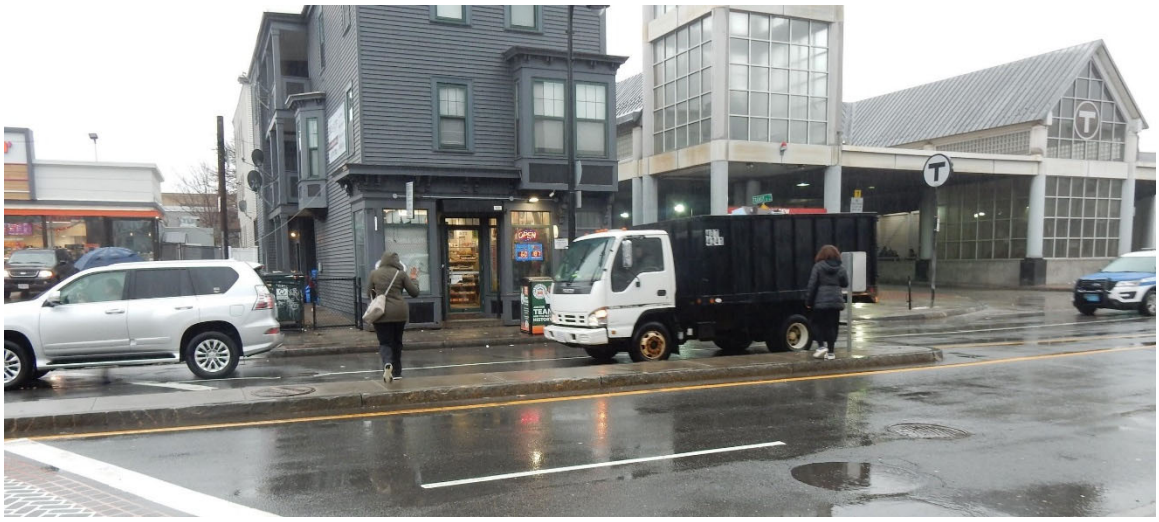
The intersection of Dorchester Avenue at Old Colony Avenue is Y-shaped, with B Street and West 7th Street intersecting with Dorchester Avenue approximately 65 feet north of Old Colony Avenue. Despite heavy vehicle volumes on Old Colony Avenue in the morning and Dorchester Avenue southbound in the evening, the intersection operates with only moderate delay due to the restriction of left turns from Old Colony Avenue. This movement is illustrated in Figure 3-7 below.

Figure 3-7 Queues at Dorchester Avenue and Old Colony Avenue Clearing during Evening Peak

Andrew Square

Andrew Square is a six-leg intersection comprised of Dorchester Avenue, Dorchester Street, Southampton Street, Boston Street, and Preble Street. Due to the complexity of the intersection and no restriction of movements on any approach, the intersection operates at a high delay for most approaches. While the pedestrian signals run concurrently with certain phases, the long cycle length (150 seconds) also provides substantial delay for pedestrians. This as well as the pedestrian desire lines to access Andrew Station causes many pedestrians to cross against the light where there are gaps in traffic (see Figure 3-8).

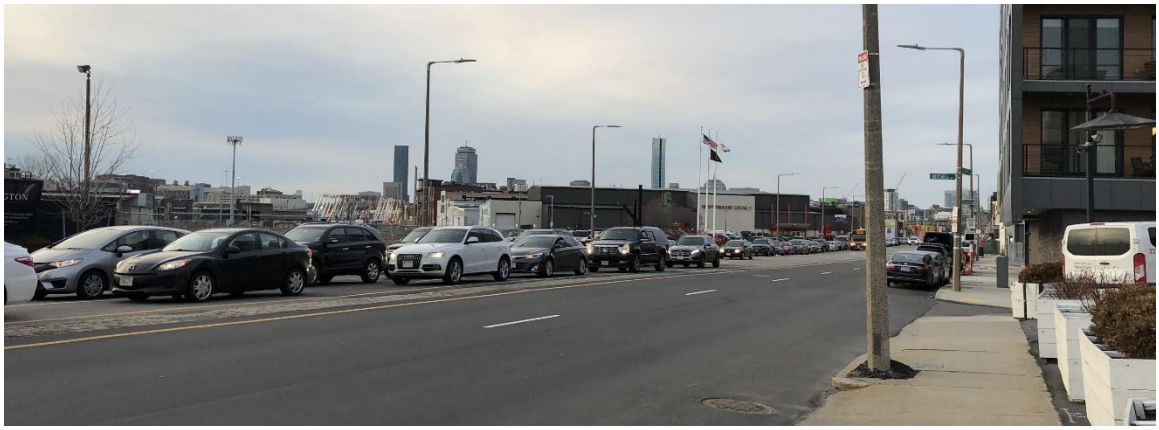
Figure 3-8 Use of Median Island as Pedestrian Refuge near Andrew MBTA Station during Morning Peak



Old Colony Avenue at Dorchester Street

All approaches for this intersection have two general purpose travel lanes with no designated turn lanes. All left turns need to yield to oncoming traffic, except for westbound Dorchester Street, which also has a leading protected left-turn phase. Old Colony Avenue northbound experiences high delays and long queues during the morning peak, while Old Colony Avenue southbound experiences high delays and long queues during the evening peak (see Figure 3-9). Despite a leading phase, the westbound approach experiences high delay in both peak periods due to high left-turn volumes.

Figure 3-9 Vehicles Queue during the Evening Peak, SB Approach of Old Colony Avenue at Dorchester Street at Evening Peak



TRAFFIC OPERATIONS

Level of service, capacity and queue analyses were conducted at the study intersections under existing traffic operation control. These analyses included an evaluation of the weekday morning peak hour (7:15 AM to 8:15 AM) and evening peak hour (4:15 PM to 5:15 PM) traffic operations under existing volume conditions.

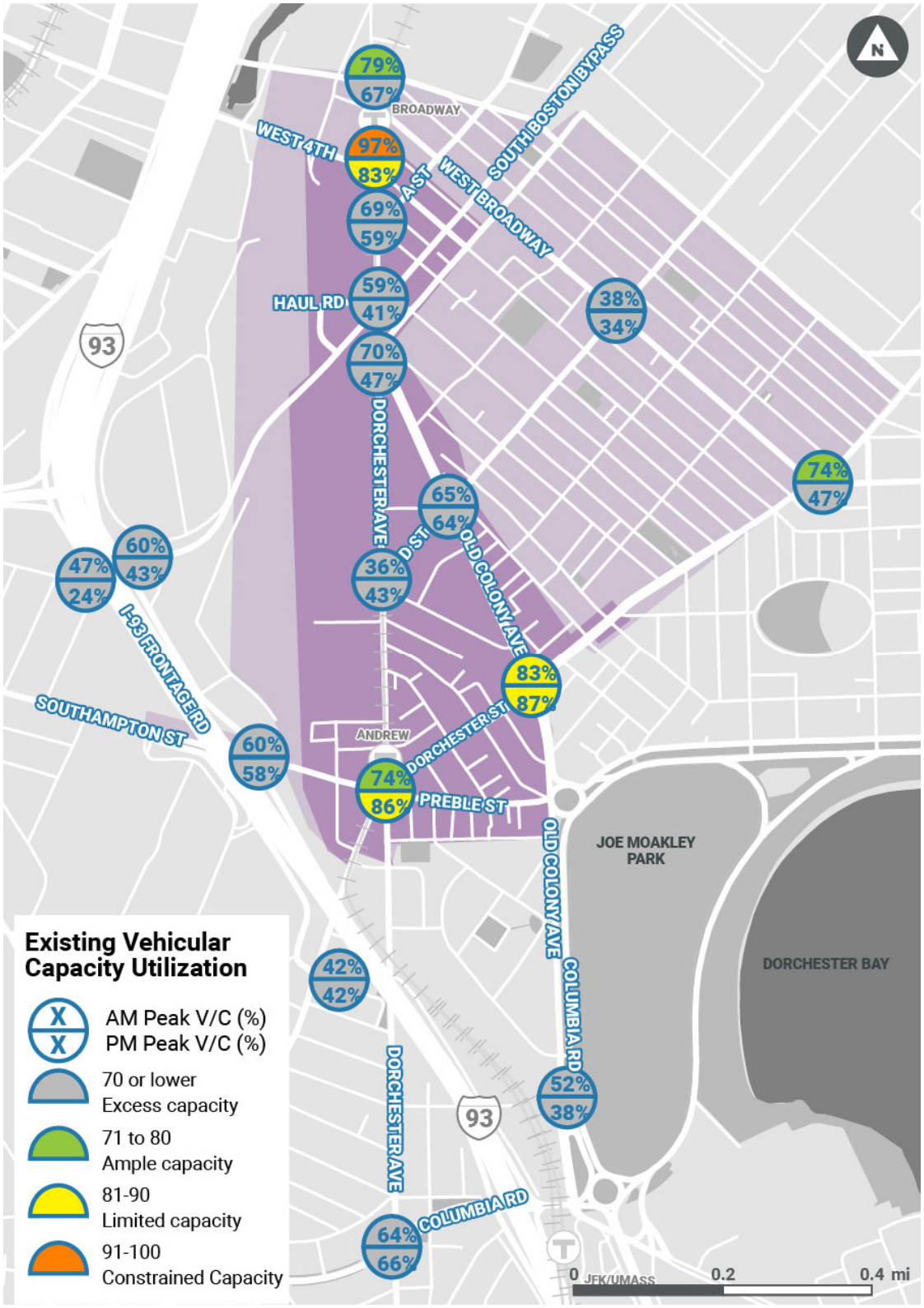
The capacity analysis methodology is based on the concepts and procedures in the *Highway Capacity Manual* (HCM)[2] utilizing the latest version of *Synchro* software.[3] The results of this analysis provide three measures that are relevant to understanding the traffic operations in the Study Area:

Volume to Capacity Ratio is a measure of the capacity utilization during the peak hour, and provides an indication of the amount of additional traffic that the intersection can serve, under the signal timing and phasing operations assumed in the analysis. Significant excess capacity is an indication that more pavement is dedicated to motor vehicle movement than necessary, and reconfiguration to balance the needs of all modes is warranted. Capacity utilization under 70% indicates substantial available capacity, and that there may be opportunities to reconfigure the intersection to improve the environment for other modes of transportation. If the capacity utilization is greater than 90%, it is likely that at least some of the intersection approaches are exceeding the available capacity. Capacity utilization between 70% and 90% is consistent with traffic operations that are able to serve peak hour traffic without excess paved area devoted to vehicle circulation. Figure 3-10 provides a summary of peak hour capacity utilization for the study intersections. Many of the intersections have excess reserve capacity, indicating opportunity for changes to address the desired balance of travel modes.

[2] *HCM 2000: Highway Capacity Manual.* Washington, D.C.: Transport Research Board, 2000.

[3] *Synchro plus SimTraffic 9*; Trafficware Ltd.; Sugar Land, TX; 2011.

Figure 3-10 Existing Intersection Volume/Capacity Ratio within Study Area (AM/PM Peak)



Level of Service is a qualitative measure of traffic congestion based on average delay. LOS A defines minimum traffic delay and LOS F represents the most significant traffic delay. Figure 3-11, excerpted from the HCM, provides Level of Service (LOS) criteria for signalized and unsignalized intersections.

Figure 3-11 Vehicle Level of Service Criteria

Level of Service	Average Stopped Delay (seconds/vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	0.0–10.0	0.0–10.0
B	10.1–20.0	10.1–15.0
C	20.1–35.0	15.1–25.0
D	35.1–55.0	25.1–35.0
E	55.1–80.0	35.1–50.0
F	>80.0	>50.0

Source: *Highway Capacity Manual*, 2000. Transportation Research Board.

In general, streets in the City of Boston are flagged for congestion-related concern if they operate below a LOS D (so at a LOS E or LOS F); intersections with LOS of A or B during the peak hour have excess vehicle capacity, and consideration of rebalancing the space among the different modes of transportation is warranted. One weakness of using vehicle level of service as a primary measure of traffic operations is that the use of a letter grade scale implies that "A" is the best condition; where in fact it is most efficient and safe to target "D" for peak hour level of service.

Figure 3-12 shows the intersection LOS for signalized intersections in the Study Area. To account for the difference in data collection years, counts collected in 2018 were adjusted by 0.5 percent. The LOS describes the average level of delay experienced by people driving through an intersection at a point in time. The figure below shows the LOS for both the morning and evening peak hours. Detailed LOS tables with additional metrics calculated by movement are provided in Appendix B.

Queue Lengths are also an important indicator of traffic operations, as queues of vehicles waiting at traffic signals can affect the upstream traffic operations, increasing delays. Synchro provides the 50th percentile queue length, which is exceeded half the time; and the 95th percentile queue length, which is exceeded only 5% of the time. The 95th percentile queue length simulates more extreme conditions where, for example, a short surge of traffic or a blocked lane may result in a longer queue, which dissipates relatively quickly. Figure 3-13 and Figure 3-14 show the 50th percentile (average) and 95th percentile queue lengths for the AM and PM peak hours.

Figure 3-12 Existing Intersection Level of Service within Study Area (AM Peak)

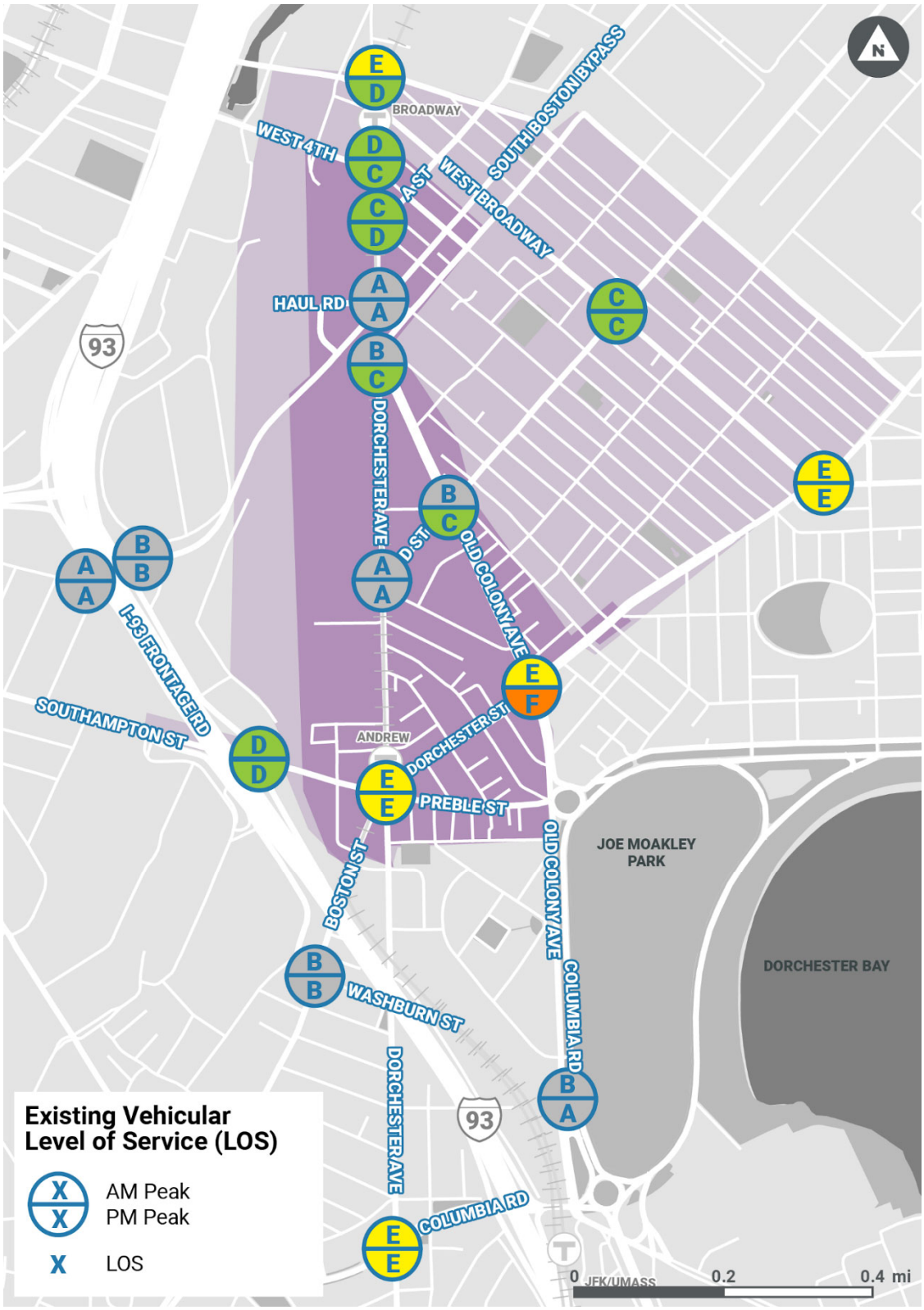


Figure 3-13 Existing Intersection Queue Lengths within Study Area (AM Peak)

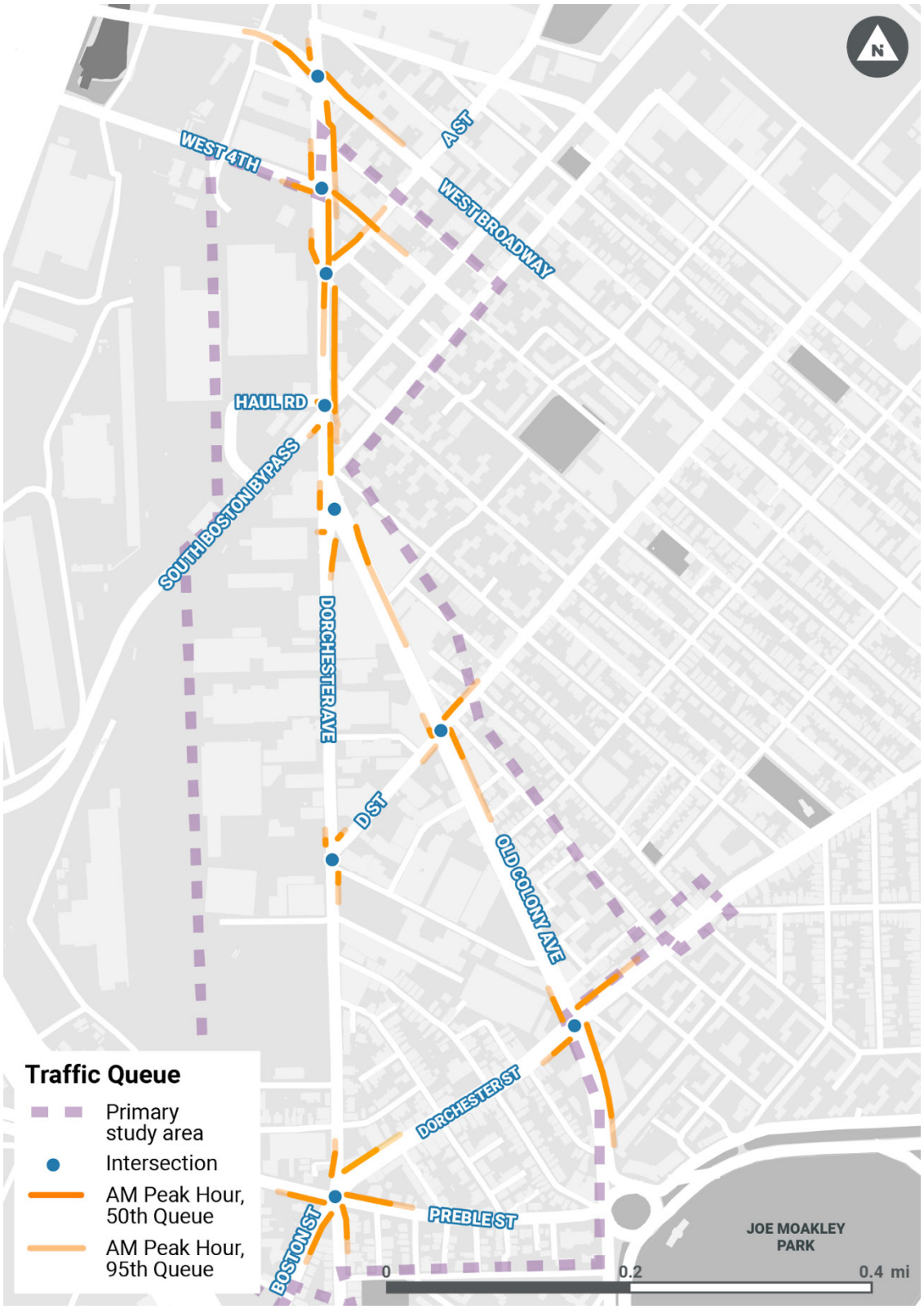
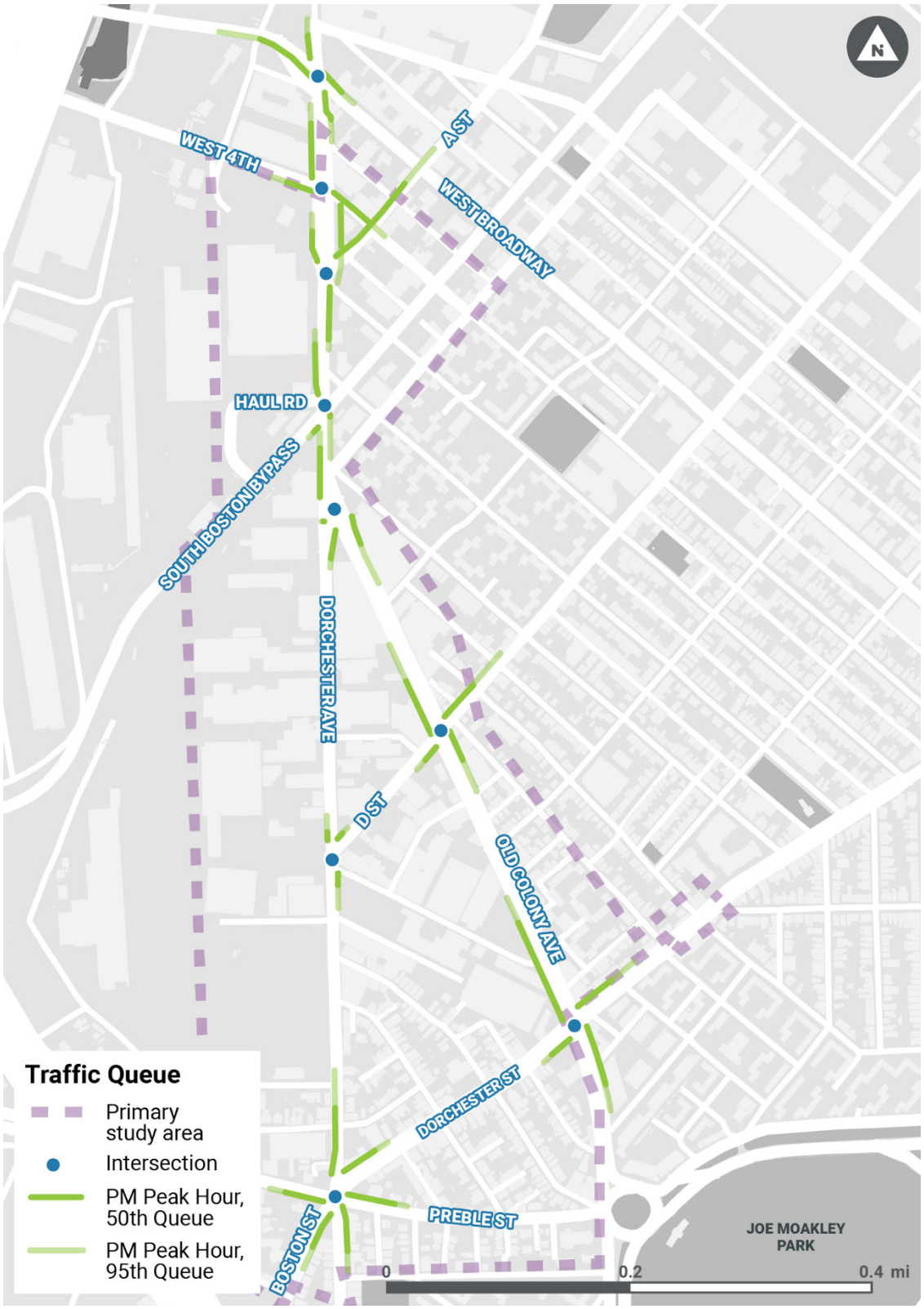


Figure 3-14 Existing Intersection Queue Lengths within Study Area (PM Peak)



4 Existing Safety Conditions

This section looks at safety concerns in the Study Area largely based on a review of the crash history.

Crash Analysis

Between 2015 and 2019, there were 282 crashes that required a public safety response, inside or within 250' of the Study Area. While none of these were fatal crashes, they didn't require a public safety response, and therefore are likely to have resulted in an injury. Of these crashes, 62 involved people walking, 34 involved people riding bicycles, and the remaining 186 involved people in motor vehicles.

About 60 percent of all reported crashes in the Study Area were located at intersections.

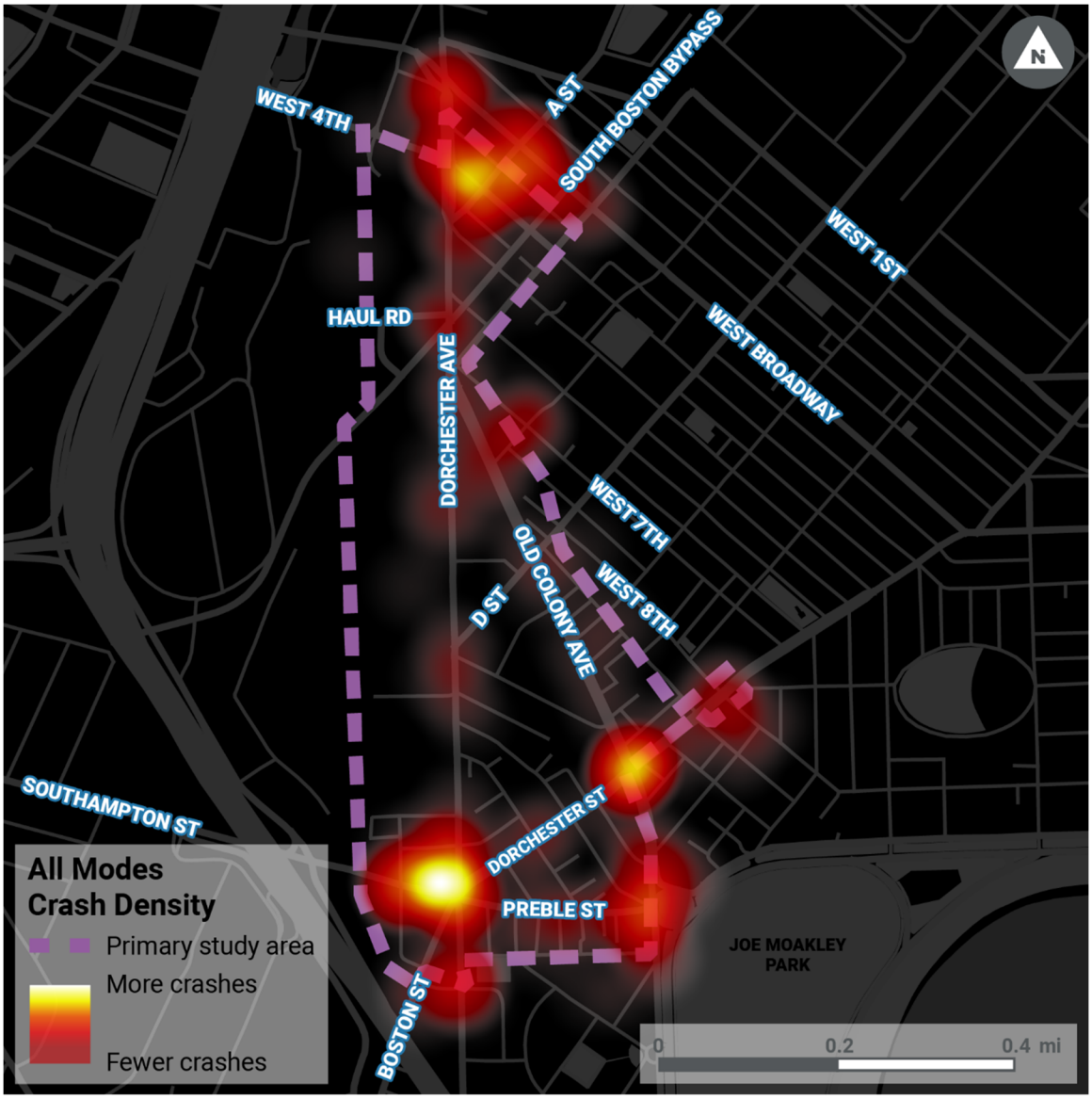
Crash Hot Spots

Crashes of all modes in the Study Area are clustered around major intersections and gateways into the Study Area. In particular, the highest concentration of crashes were located at:

- Andrew Square
- Old Colony Avenue and Dorchester Street
- A Street and West Fourth Street

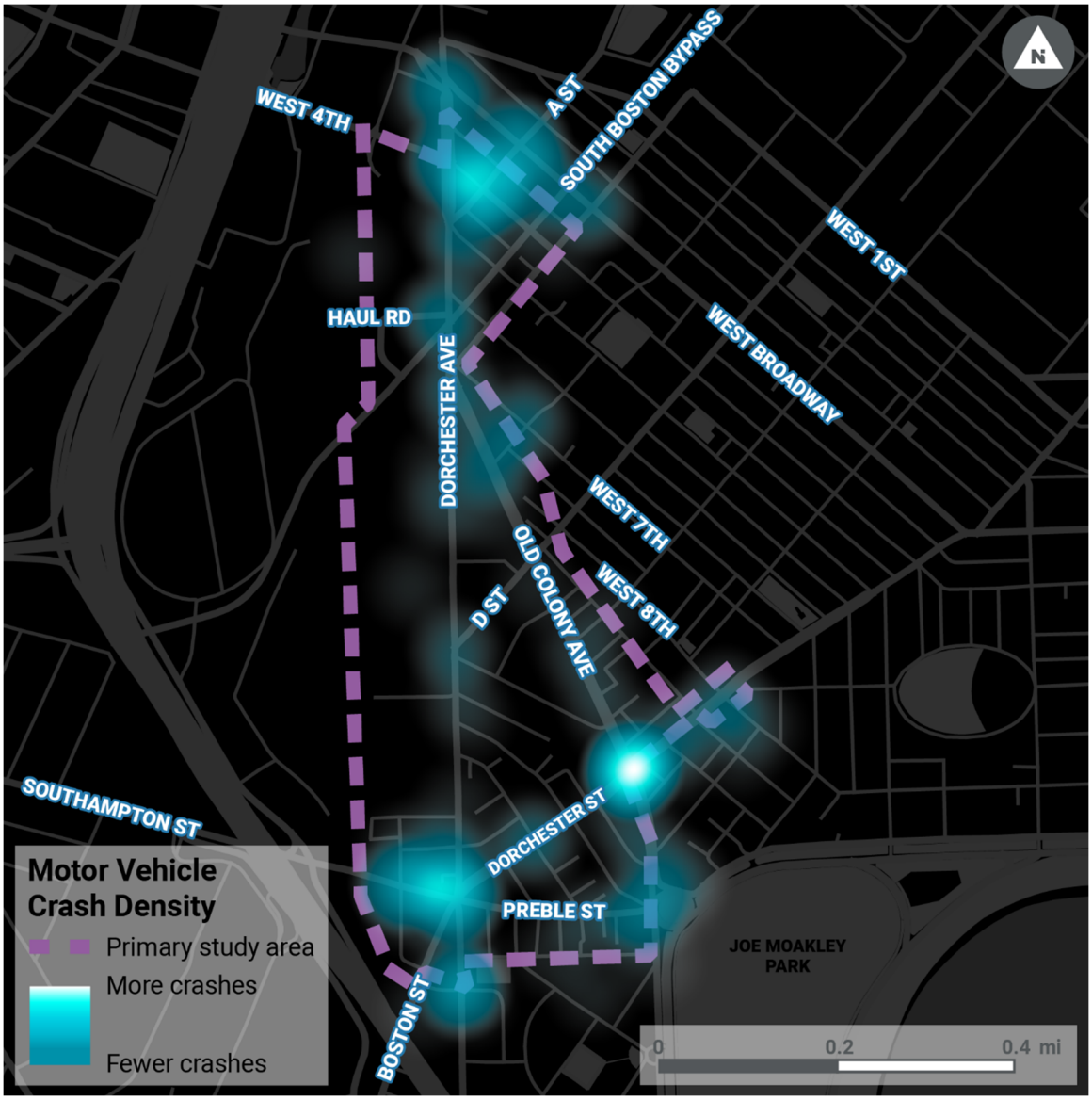
Dorchester Avenue and West Fourth Street, West Broadway and A Street, Old Colony Avenue and Columbia Road, and West Broadway and Dorchester Avenue also had high concentrations of crashes.

Figure 4-1 Crash Densities (All Modes) 2015-2019



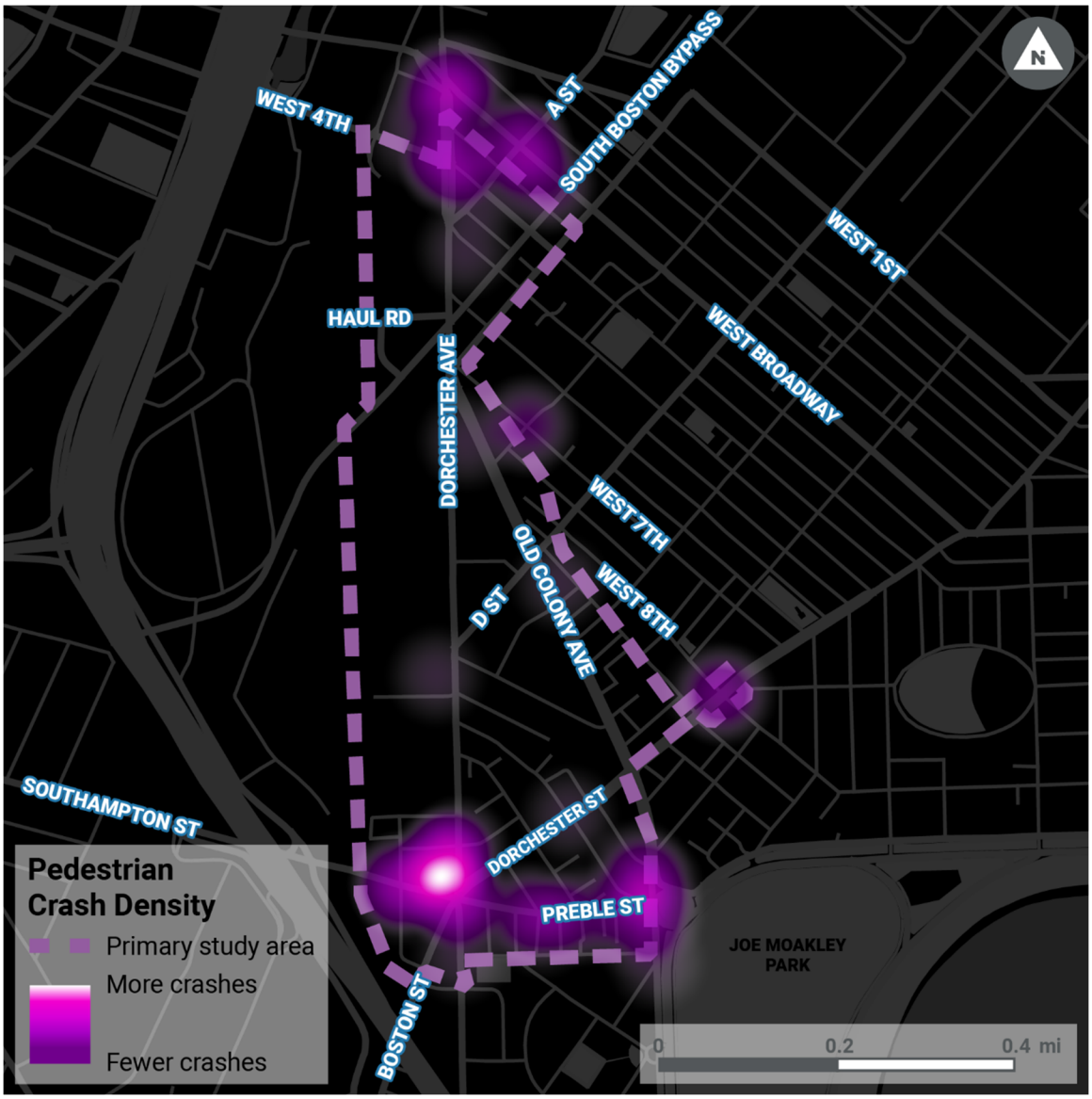
Motor vehicle injury crashes, as illustrated in Figure 4-2, cluster most prominently at the intersection of Old Colony Avenue and Dorchester Street, which alone was the site of 20 crashes from 2015 to 2019. With two divided two-lane streets intersecting, high vehicle speeds and the lack of dedicated turning lanes may be contributing to higher injury rates in crashes at this intersection.

Figure 4-2 Crash Densities (Motor Vehicles Only) 2015-2019



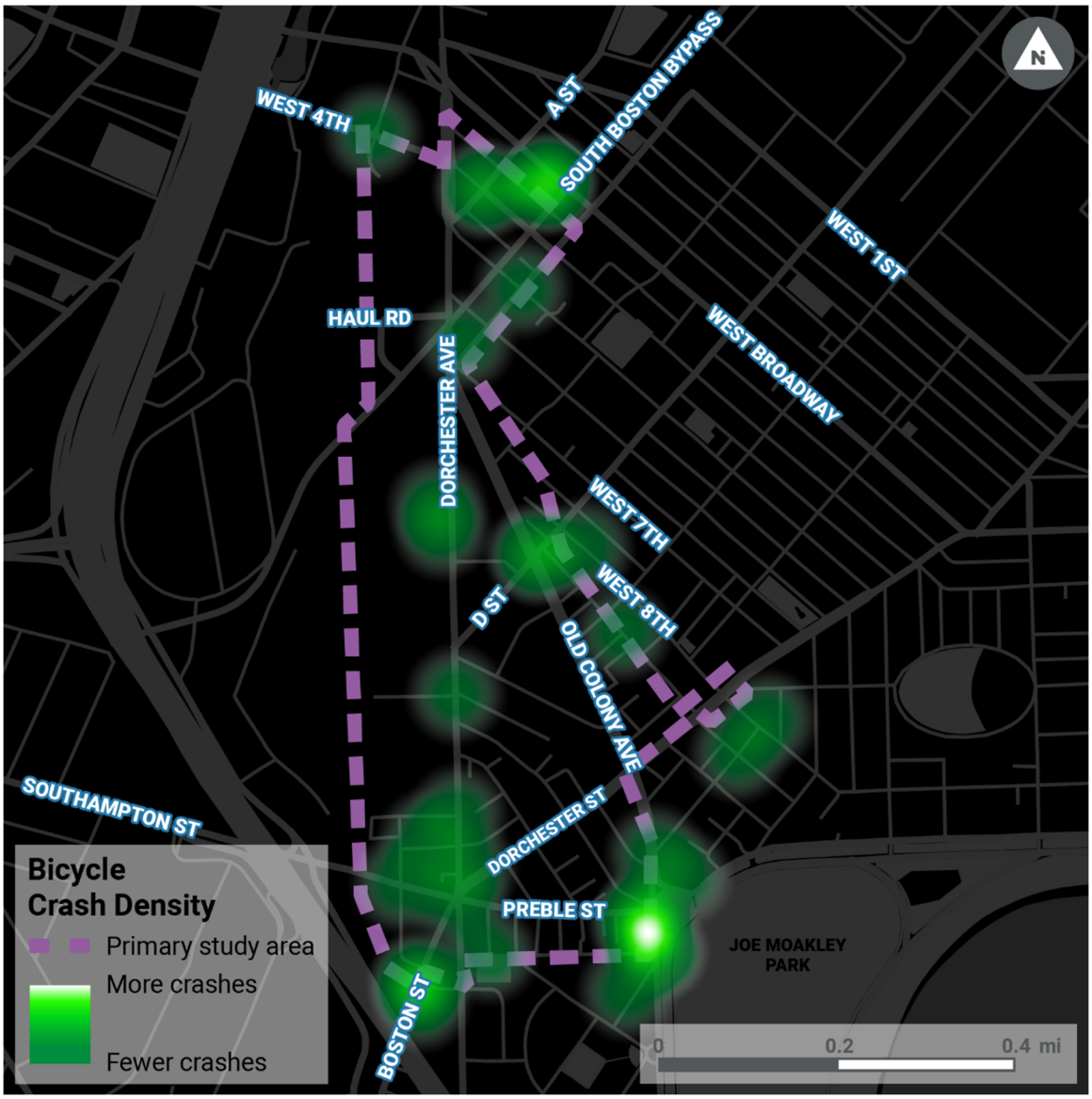
Pedestrian injury crash densities are shown in Figure 4-3. Andrew Square is the site of the most pedestrian-involved injury crashes in the Study Area. In the immediate vicinity of the square there were eighteen injury crashes involving pedestrians. The intersection is complicated by its geometry, with six approaches, each with two approach lanes. Additionally, the Andrew MBTA station on the northwest corner attracts pedestrians from the adjacent neighborhoods, who need to cross one or more intersection legs to reach the station.

Figure 4-3 Crash Densities (Pedestrians Only) 2015-2019



Bicycle crash densities are shown in Figure 4-4. The Columbia Road Rotary, where Columbia Road, Old Colony Avenue, Preble Street, and Vinton Street intersect, is the site of the highest concentration of injury crashes involving bicyclists. There were six injury crashes in the last five years at the circle, with another two within a block. The rotary is an important connection point for people using the buffered bike lanes on Old Colony Avenue south of the circle, the shared-use path along William Day Boulevard via Columbia Road, and Joe Moakley Park directly to the east.

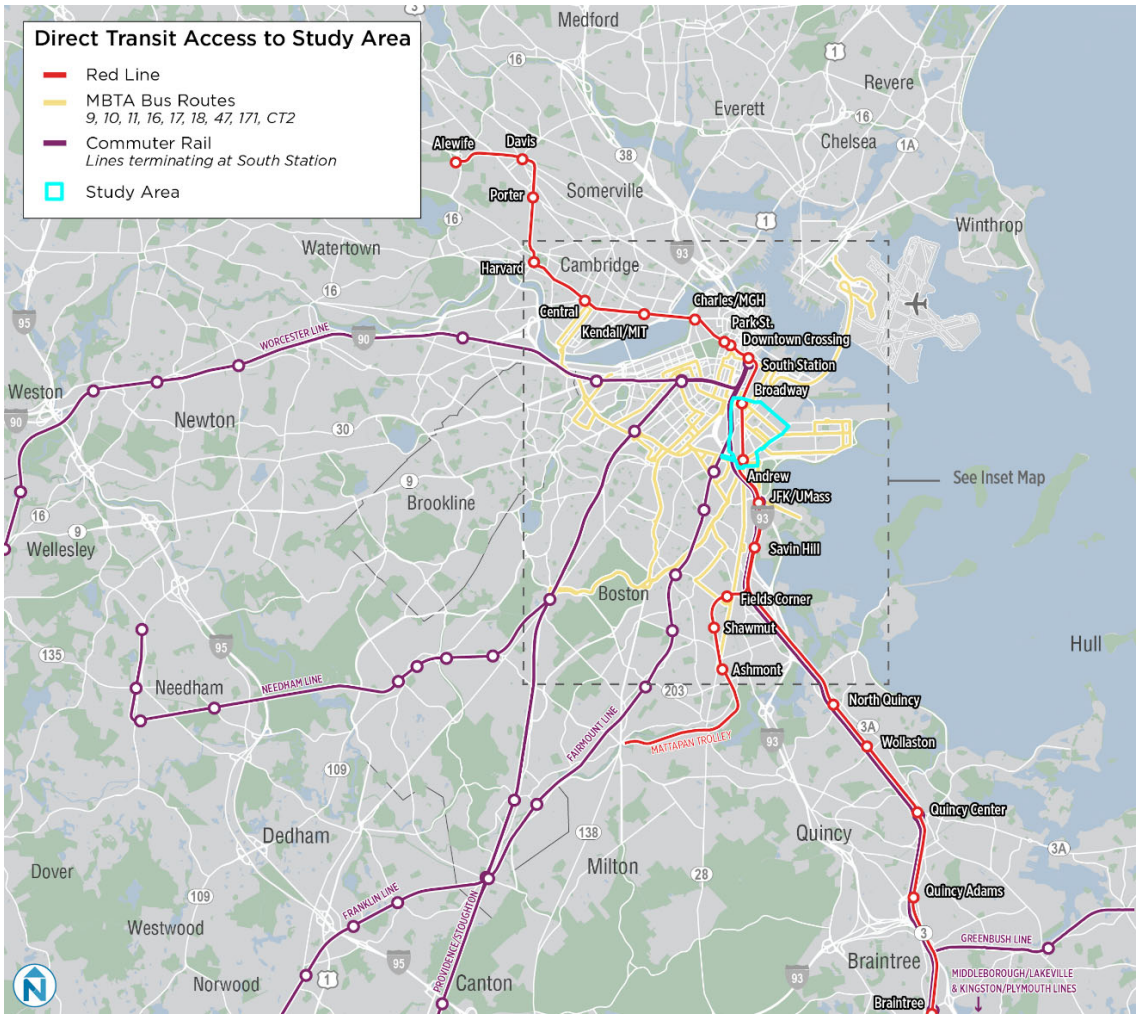
Figure 4-4 Crash Densities (Bicyclists Only) 2015-2019



5 Existing Transit Conditions

The PLAN: South Boston Dorchester Avenue Transportation Plan Study Area is served by the following transit connections: two MBTA Red Line stations: Broadway Station in the north and Andrew Station in the south; three bus routes connecting at Broadway Station: Route 9, Route 11, and Route 47; and six bus routes connecting at Andrew Station, Route 10, Route 16, Route 17, Route 18, Route 171, and CT3. The Study Area is also indirectly served by commuter rail services that connect to South Station and JFK/UMass Station which can be reached via the Red Line, as well as Newmarket Station. Both the South Station and Newmarket Stations are within a 15-20 minute walk from the Study Area.

Figure 5-1 Transit Access to the Study Area



Transit Activity in the Study Area

The transit commute modeshare, or the percentage of total trips taken by each mode, in the Study Area is currently lower than surrounding areas with similar transit access. Drive-alone rates (38%) and transit rates (39%) are nearly the same for commuters who live in (and therefore travel from) the Study Area and many commuters walk or bicycle (15%) indicating shorter commute trip lengths. The majority of work trips to the Study Area are drive alone (63%) and less than one-fifth (18%) are transit trips. Although well connected via transit, the lower-density and industrial land-use and job types lend themselves to auto-oriented travel.

Figure 5-2 Commute Modeshare from Study Area

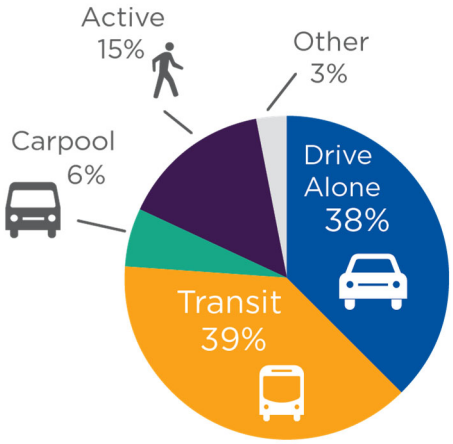
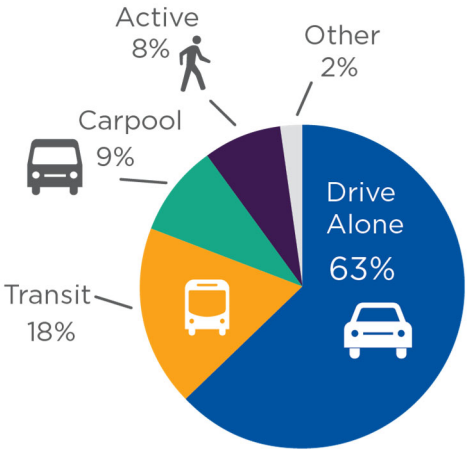
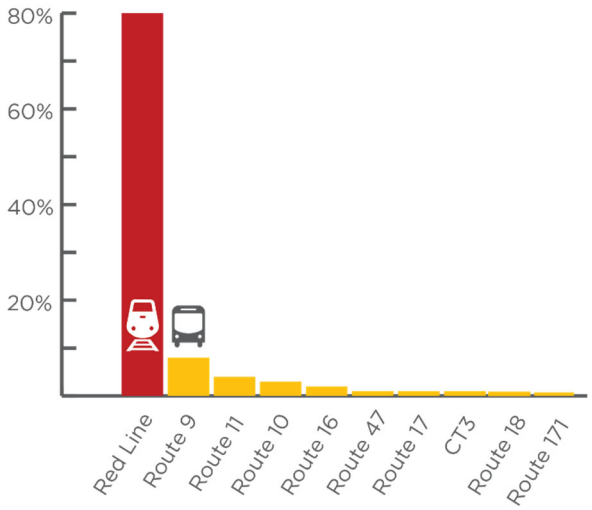


Figure 5-3 Commute Modeshare to Study Area



Source: ACS 2018 5-Year Datta

Figure 5-4 Ridership to and from the Study Area by Route



Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

Of the approximately 26,000 weekday transit trips that originate in and are completed in the Study Area, the vast majority of ridership activity occurs on the Red Line (80%). The remaining 20% use buses, of which Route 9 accounts for 8% of total activity; Route 11 accounts for 4%; and the remaining bus lines account for 3% or less of total transit boardings and alightings in the Study Area (see

Figure 5-4).

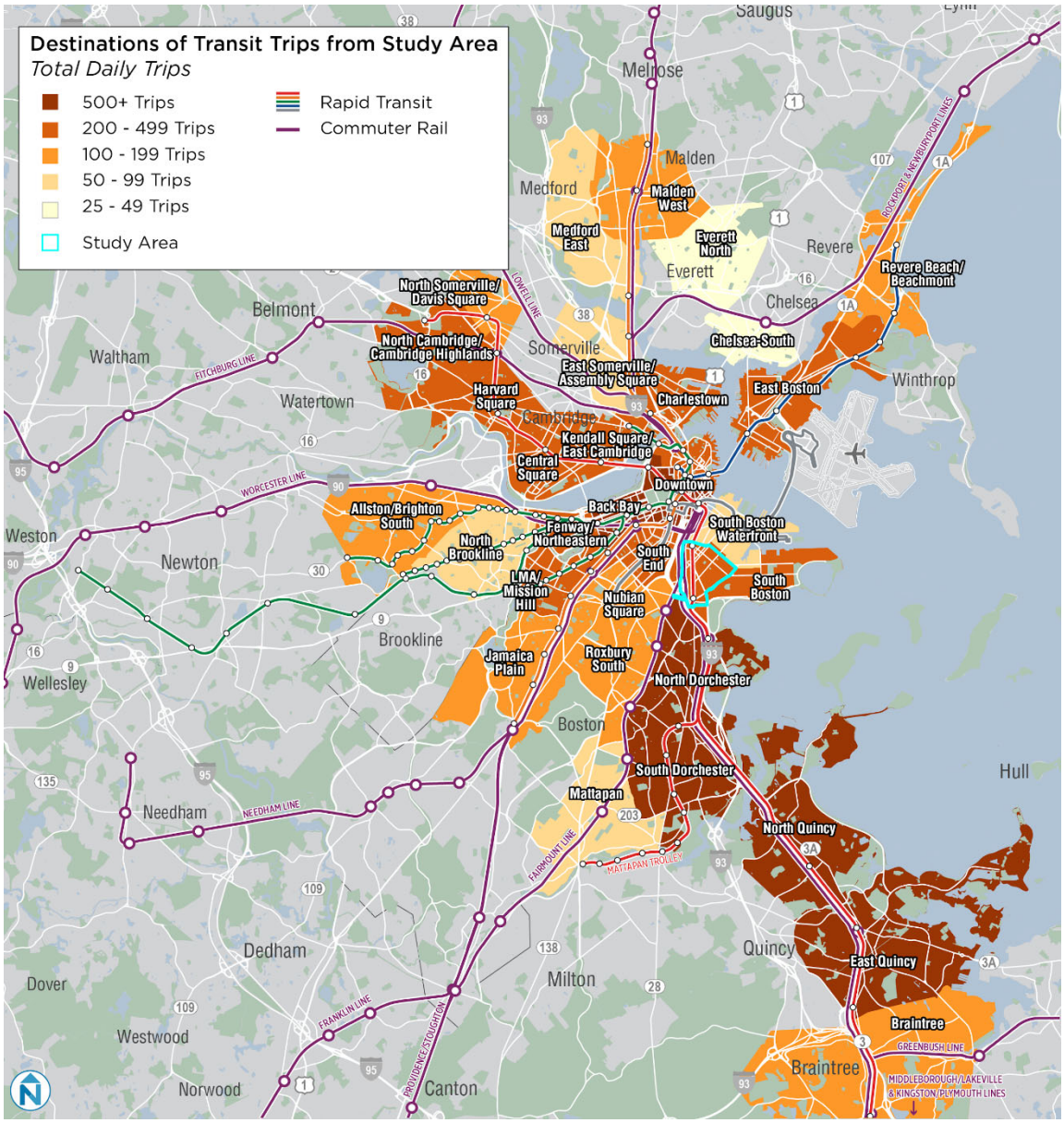
Transit Trip Origins and Destinations

Transit trips starting and ending in the Study Area follow the same general patterns. Mirrored trip patterns generally indicate lower levels of mixed-use development and a high share of commuter trips. For example, an area with a high proportion of restaurants and retail will experience many trips coming from areas that do not have a mirrored return trip, (a transit rider who commutes to work, rides to meet a friend at a restaurant in a different neighborhood, and then returns home on a different transit line than they used to commute into work does not have a mirrored transit experience).

For trips both to and from the Study Area, the highest concentration of trips occur at other MBTA Red Line stations, in particular the three stations in Downtown Boston (South Station, Downtown Crossing, and Park Street), three stations in Cambridge (Kendall/MIT, Central, and Harvard), and select stations south of the Study Area (JFK/UMass, Fields Corner, and Quincy). Back Bay and Copley on the Orange Line and Green Line respectively also serve as origins and destinations. The majority of transit ridership to and from the Study Area on bus lines come from adjacent areas in South Boston and the South End (see Figure 5-5 and Figure 5-7).

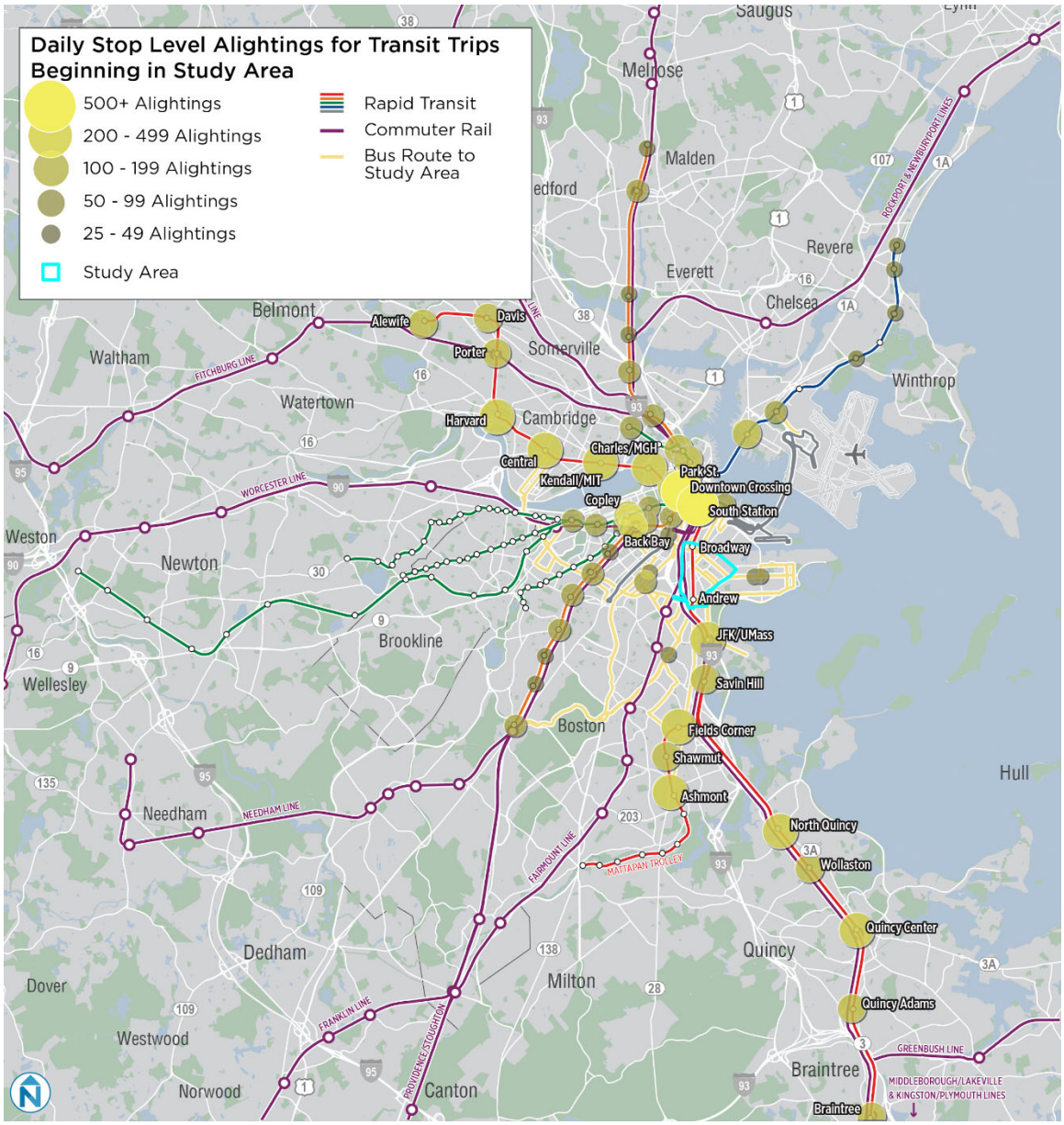
At a neighborhood level, North Quincy, East Quincy, South Dorchester, North Dorchester, Downtown, Back Bay, and South Boston have more than 500 daily trips either to and from the Study Area. All neighborhoods in Cambridge, the South End, Fenway/Northeastern, LMA/Mission Hill, East Boston, Charlestown to and from the Study Area, and Roxbury South to the Study Area have moderately high trip levels, with 200-500 per day. The majority of neighborhoods with more than 25 daily trips originating in or destined from the Study Area are within Boston, Brookline, Newton, Braintree, Weymouth, Somerville, Medford, Everett, Chelsea, and Revere (see Figure 5-6 and Figure 5-8).

Figure 5-5 Destinations of Transit Trips from Study Area



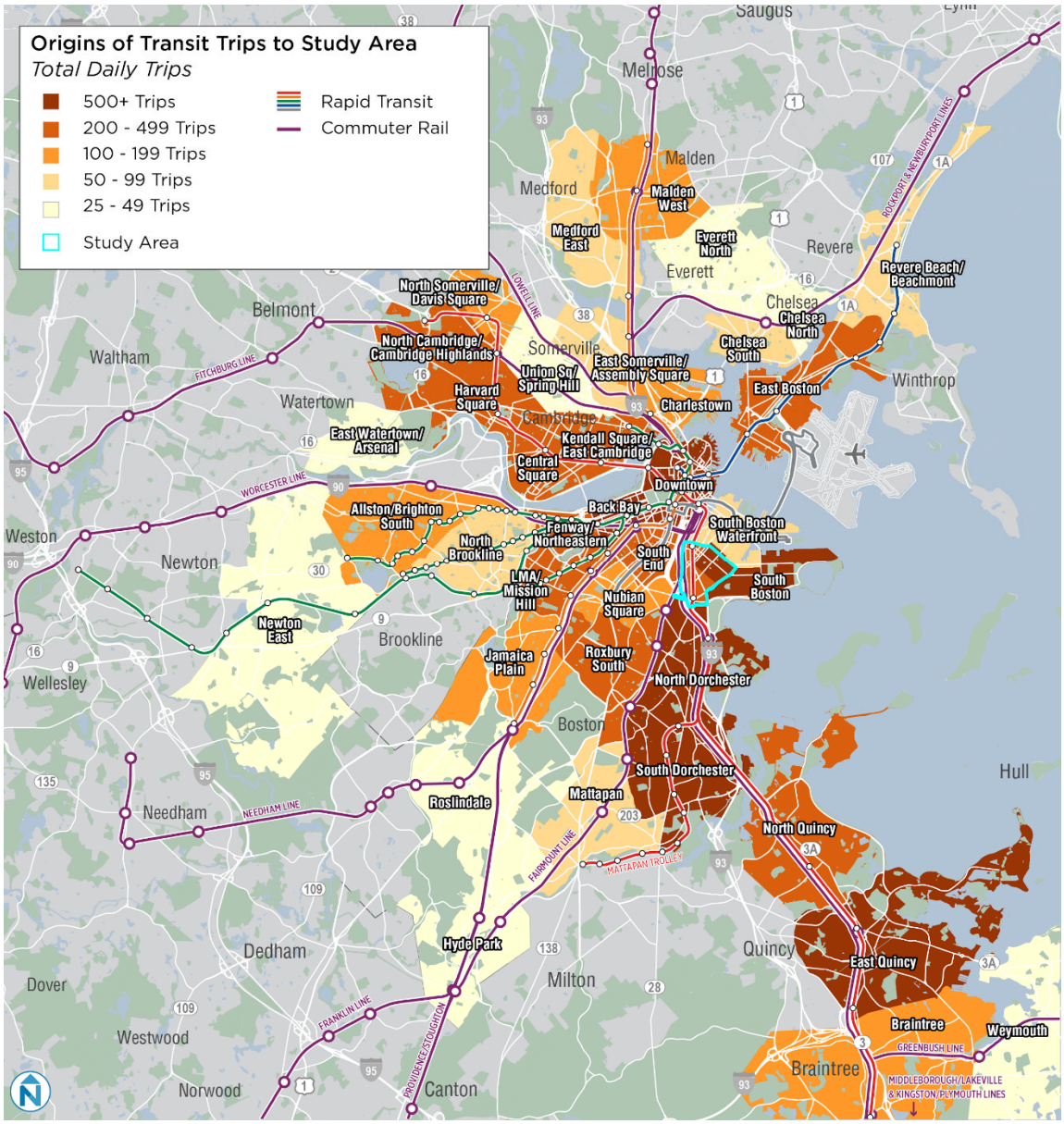
Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

Figure 5-6 Stop Level Alightings for Transit Trips Beginning in the Study Area



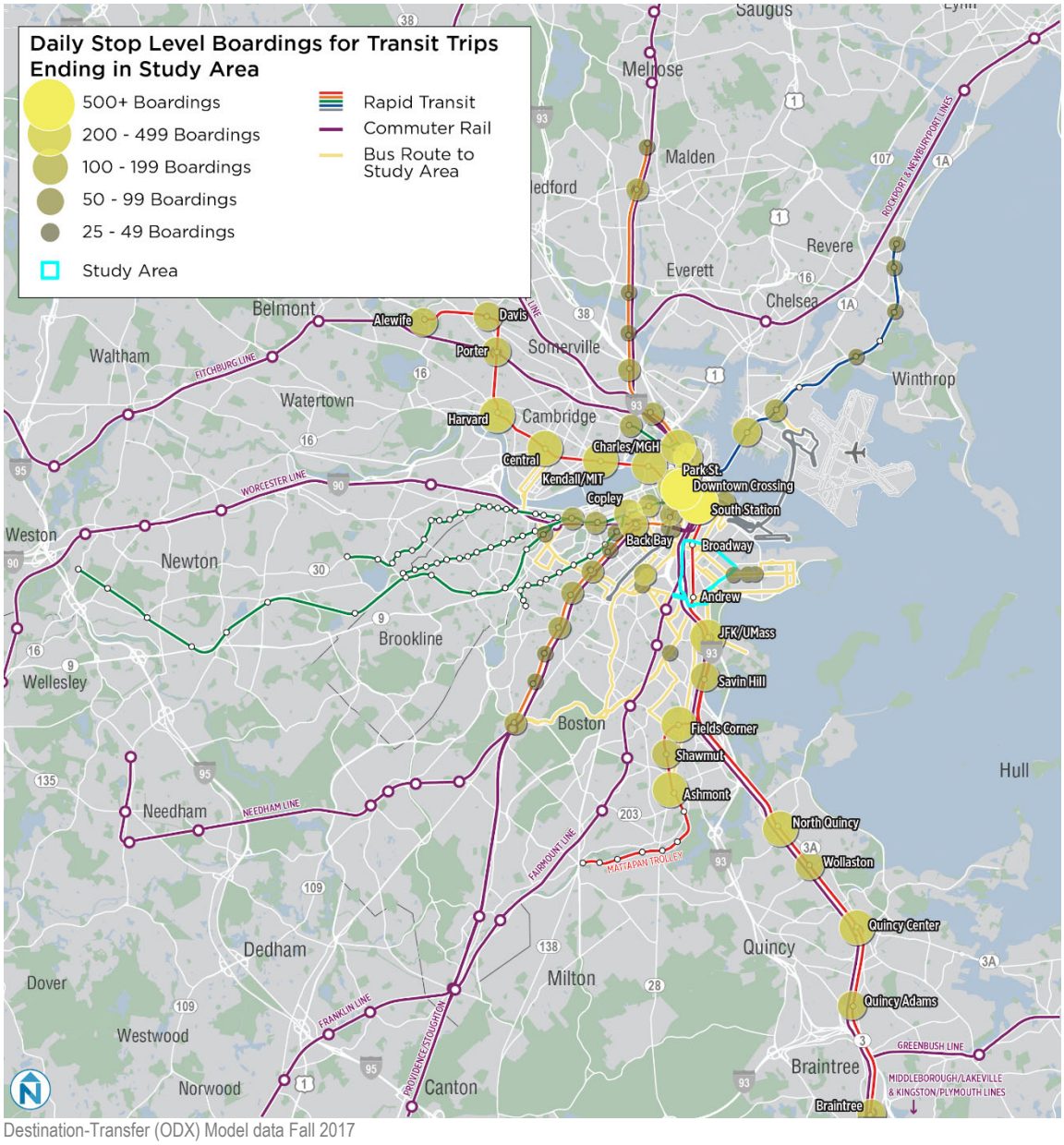
Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

Figure 5-7 Origins of Transit Trips to Study Area



Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

Figure 5-8 Stop Level Boardings for Transit Trips Ending in Study Area

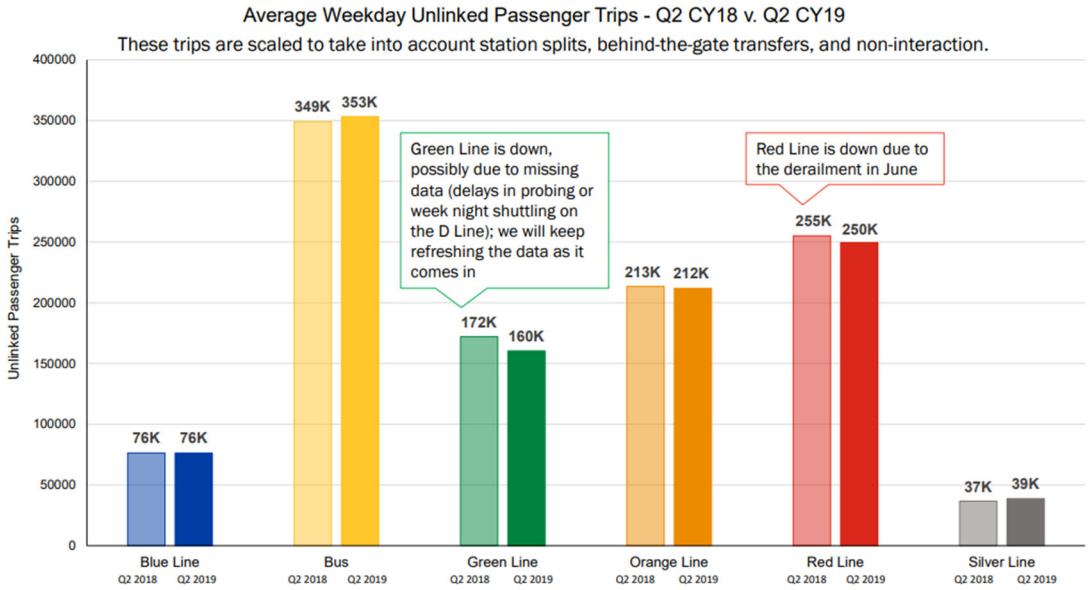


Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

MBTA Red Line Capacity

The Red Line is the spine of the MBTA system. On an average weekday, it carried 250,000 unlinked passenger trips (or each new transit vehicle boarding, regardless if it is a transfer or not) in the second quarter of 2019 (CY referring to calendar year), larger than any other rapid transit line in the MBTA system and for comparison purposes more than 70 percent of all bus ridership combined (see Figure 5-9).

Figure 5-9 MBTA Ridership Comparison



Source: MBTA Ridership Quarterly Update Fiscal Management Control Board Presentation. October 2019.

With such high ridership, overcrowding and capacity constraints on the Red Line are of major concern. The Red Line is at its most constrained point within the Study Area—which occurs during AM peak inbound and PM peak outbound (see Figure 5-10 through Figure 5-13). Because of the economic significance of Downtown and the radial nature of the MBTA system, most riders do not use the Red Line to travel south of Downtown to north of Downtown or vice versa. Because most passengers are destined for Downtown, either to complete their trip or transfer to other transit (all rapid transit transfer opportunities occur within the downtown core), the highest loads in the AM peak occur at Andrew and Broadway because they are the two stops just south of the three Downtown stops (South Station, Downtown Crossing, and Park Street). Both Andrew and Broadway are major transfer connections to buses and the Study Area is not a major destination today, so many passengers transfer on to the Red Line at Broadway or Andrew while few passengers alight. During the PM peak hour inbound, the most congested point occurs at Kendall/MIT, just before Downtown. Southbound trains exiting Downtown and entering the Study Area experience loads dropping and remaining low in the Study Area and points south.

In the outbound direction, patterns are very similar to the inbound direction, but reversed. For the MBTA in general, PM peak loads are lower than AM peak loads because passenger travel is spread out over a greater time span. In the PM peak outbound direction, loads build steadily while passing through Downtown and into the Study Area and drop sharply once reaching JFK/UMass south of the Study Area. In the AM peak outbound direction, loads fall steadily south of Central, dropping and remaining low after leaving Downtown at South Station.

The MBTA has developed policy capacity levels to reflect rider comfort standards while taking transit. The policy capacity for the Red Line is defined as 140 percent of seated capacity (an average 6-car train has 378 seats), as standing is expected and designed for in rapid transit cars. Ridership and reliability vary along the Red Line by day. Understanding the different ranges of loads and reliability can paint a picture of the varying conditions riders experience on the Red Line. In order to display these different situations, the load at the 50th percentile and the 95th percentile were graphed in order to represent a *normal* load and *very high* load. Although scheduled to arrive at JFK/UMass station and stations north every 4.5 minutes during the peak, the average observed headway is approximately every 6 minutes on a normal day (median frequency), and every 8 minutes on a poor performing day (bottom 25% of trips)—nearly twice the scheduled headway.

When running at a scheduled frequency of every 4.5 minutes, even very high loads at the most constrained point in the system do not exceed policy capacity. Comparing a normal load to a normal frequency, loads only exceed comfortable riding standards at Broadway during AM peak inbound trips. However, when comparing normal loads or very high loads to *bad day* frequencies, or very high loads to *normal day* frequencies, the picture gets much worse, and leads to the uncomfortable riding conditions many Red Line riders regularly experience. To make matters worse, often high ridership days cause delays and slower frequencies as it takes longer for passengers to alight and board. This means that regularly a *very high* load could be accompanied by a *bad day* in terms of frequency, causing extremely crowded conditions especially in the Study Area at AM peak hour inbound and PM peak hour outbound.

Figure 5-10 Red Line AM Peak Hour Inbound Loads & Capacity

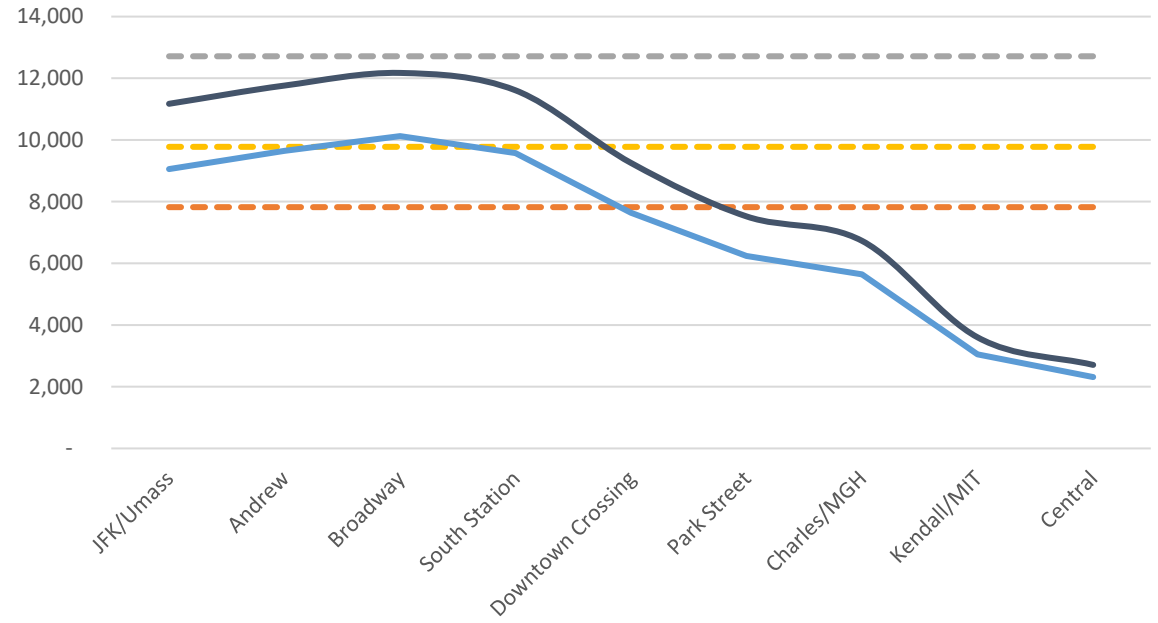


Figure 5-11 Red Line PM Peak Hour Inbound Loads & Capacity

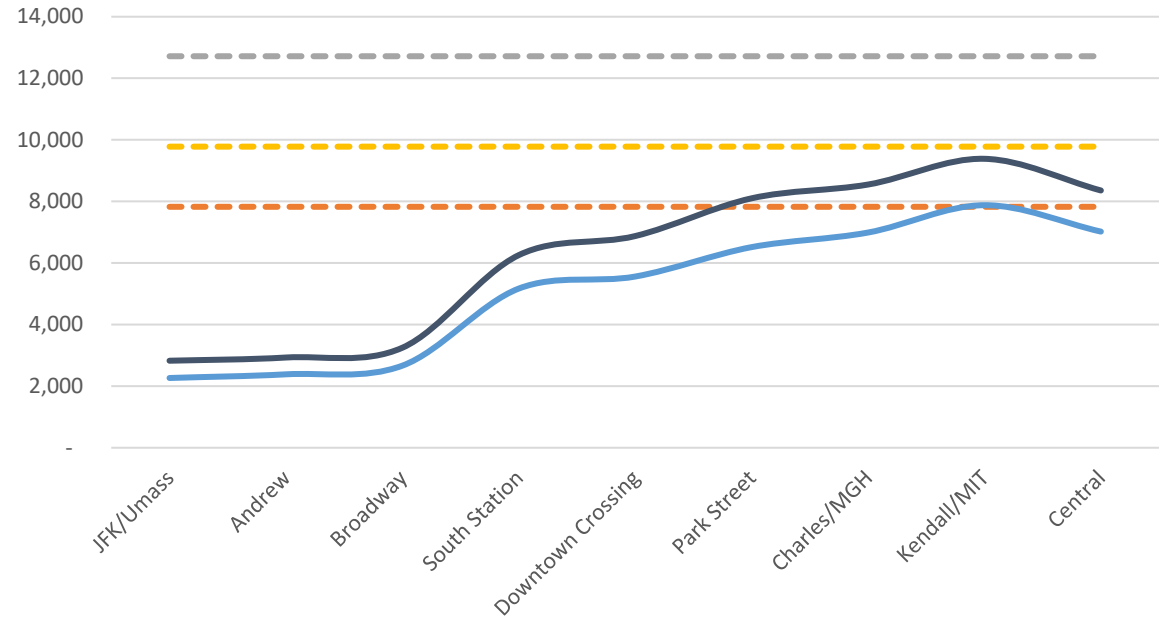


Figure 5-12 Red Line AM Peak Hour Outbound Loads & Capacity

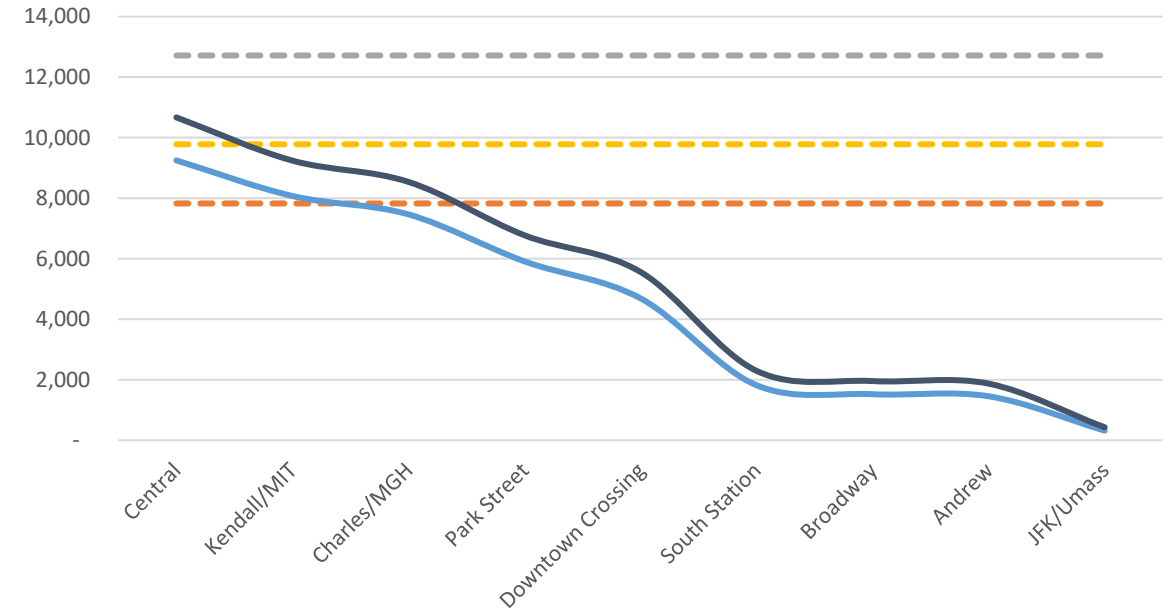
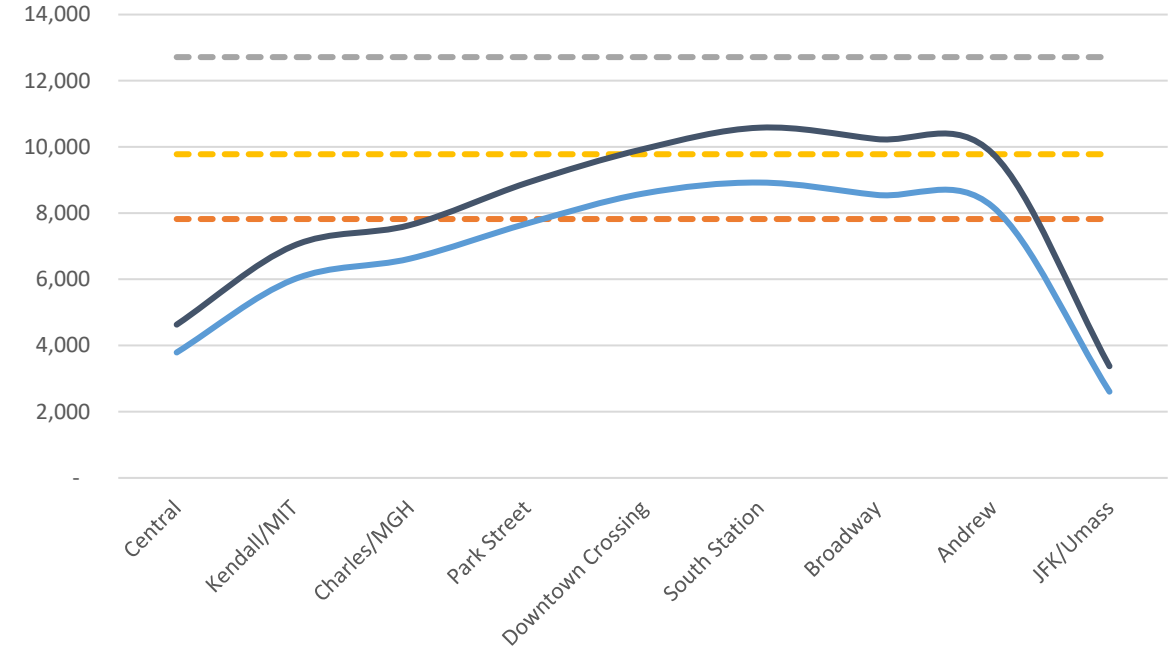


Figure 5-13 Red Line PM Peak Hour Outbound Loads & Capacity



Transfer Activity

Transfers from bus to rapid transit at Broadway and Andrew, as shown in Figure 5-14 and Figure 5-15, are a significant aspect of the transit activity in the Study Area. Of those stations along the Red Line that provide bus to rail transfers, Broadway and Andrew have the fourth and fifth highest transfer rates (6,300 daily weekday boardings, 22 percent of which are transfers and 6,400 daily weekday boardings, 17 percent of which are transfers respectively), preceded by Quincy Center with the highest (8,800 weekday boardings; 29 percent transfer rate), Ashmont (9,800 weekday boardings; 28 percent transfer rate), and Harvard (20,400 weekday boardings; 24 percent transfer rate). While the Study Area is not a major employment or residential center at this time, it is a critical point in the transit network for those from the surrounding areas to reach the Red Line.

Figure 5-14 Transfer Activity at Broadway

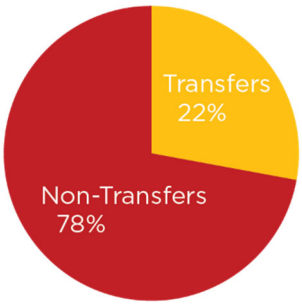
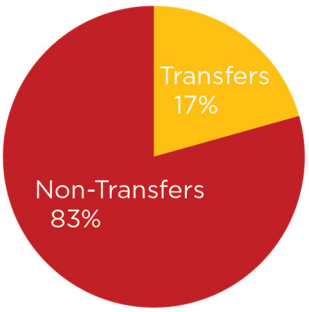


Figure 5-15 Transfer Activity at Andrew



Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

Of those nearly 2,200 transfers that occur at Broadway, the largest proportion is to or from Route 9 (56 percent) followed by Route 11 (33 percent), and Route 47 (11 percent). The transfer at Broadway from Route 9 and Route 11 allows for connections between South Boston and Downtown. Route 47 has multiple opportunities to transfer to rapid transit at other stations, which is why it makes up a lower amount of transfers. Of those nearly 1,800 transfers that occur at Andrew, Route 16 makes up the largest proportion (36 percent), followed by Route 10 (22 percent), Route 17 (21 percent), the CT3 (19 percent), and Route 18 at only 1 percent. Route 16 provides crosstown service and a Red Line connection for areas of Dorchester as well as a connection to the University of Massachusetts Campus. Route 10 also provides an opportunity to travel Downtown from South Boston. Route 17 provides service from Dorchester to the Red Line, and the CT3 provides a Red Line connection from the South End and the Longwood Medical Area (LMA). Because Route 18 runs parallel to a section of the Red Line, those wishing to travel to other areas along the Red Line would board sooner, which can explain the low transfer rate. Route 171 runs before the Red Line begins to run, so transfers are not possible.

Figure 5-16 Bus Transfers at Broadway

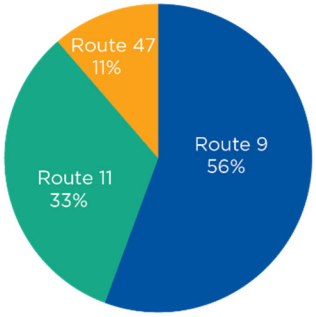
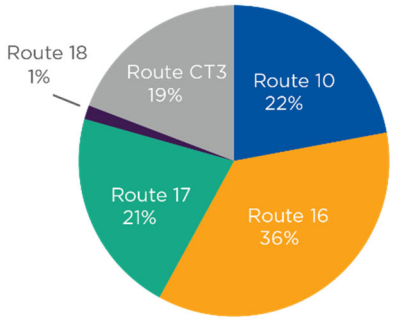


Figure 5-17 Bus Transfers at Andrew

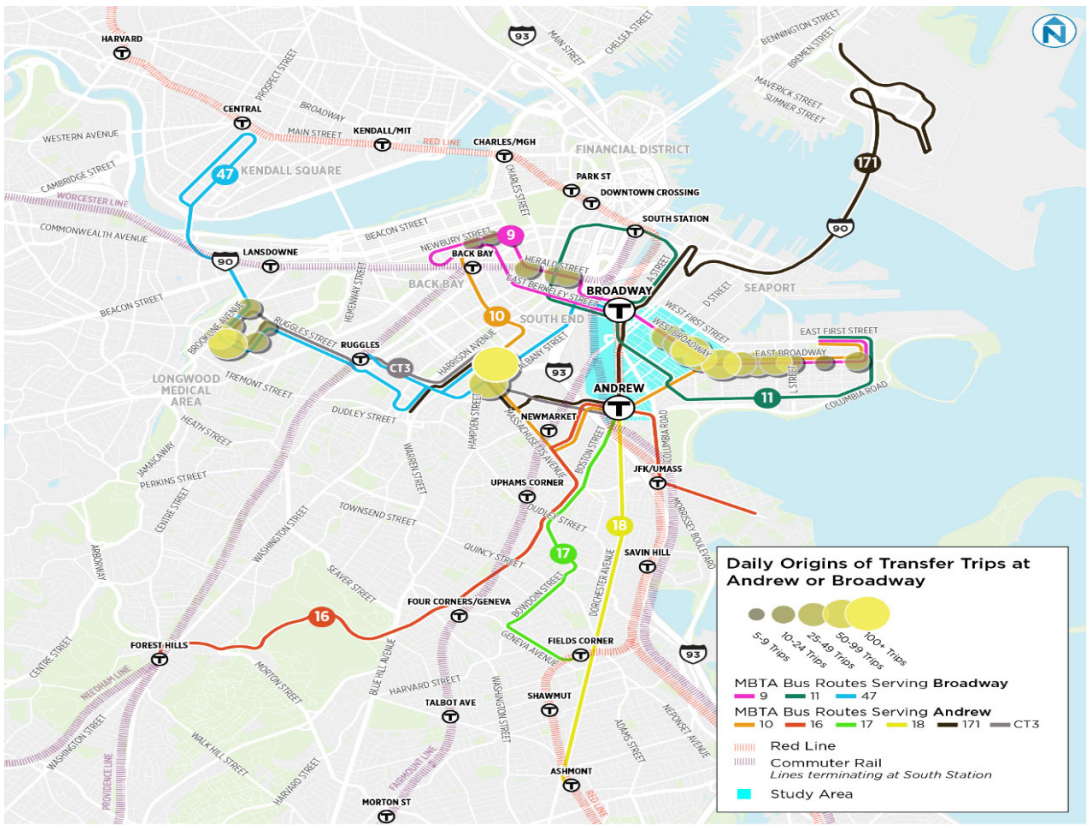


Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

Origins of Transfers from Bus to Red Line

Of those who ride a bus in order to transfer onto the Red Line at Andrew or Broadway, the highest activity occurs in South Boston along Broadway on the Route 9; in the South End along Albany Street on the Route 47, and in the Longwood Medical Area along the Route 47 and CT3 (see Figure 5-18).

Figure 5-18 Bus Stop Origins of Transfer Trips at Andrew or Broadway

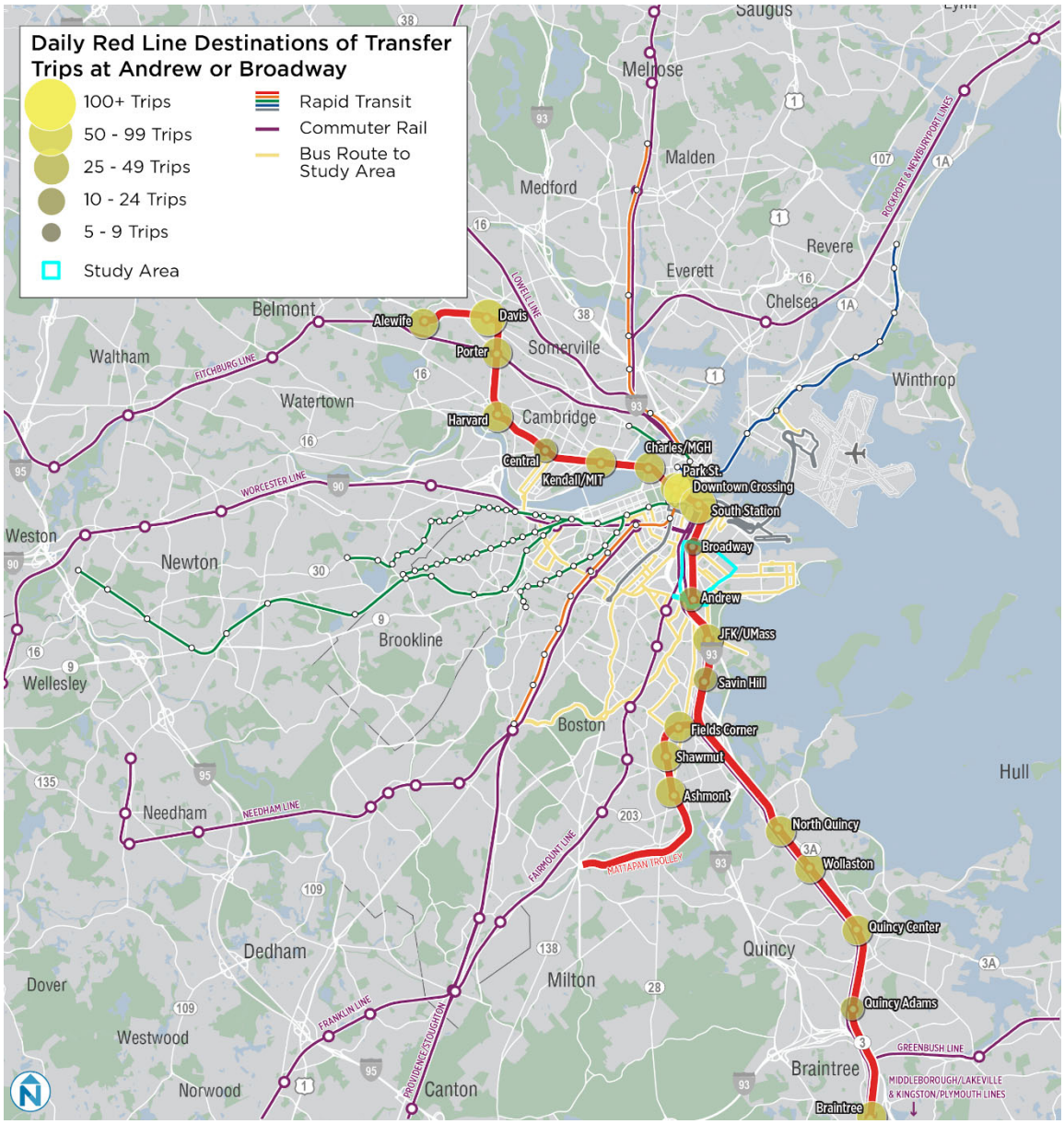


Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

Destinations of Transfers from Bus to Red Line

Once riders transfer to the Red Line, if their transit journey ends at another Red Line station, the highest concentration ends their trips at one of the three Downtown stations--South Station, Downtown Crossing or Park Street (see Figure 5-19). Most other Red Line stations have similar amounts of alightings. While small, some passengers transfer to Broadway or Andrew to end their journey at the other, possibly because of the unpleasant pedestrian conditions within the Study Area or proximity to final destination.

Figure 5-19: Red Line Destinations of Transfer Trips from Andrew or Broadway

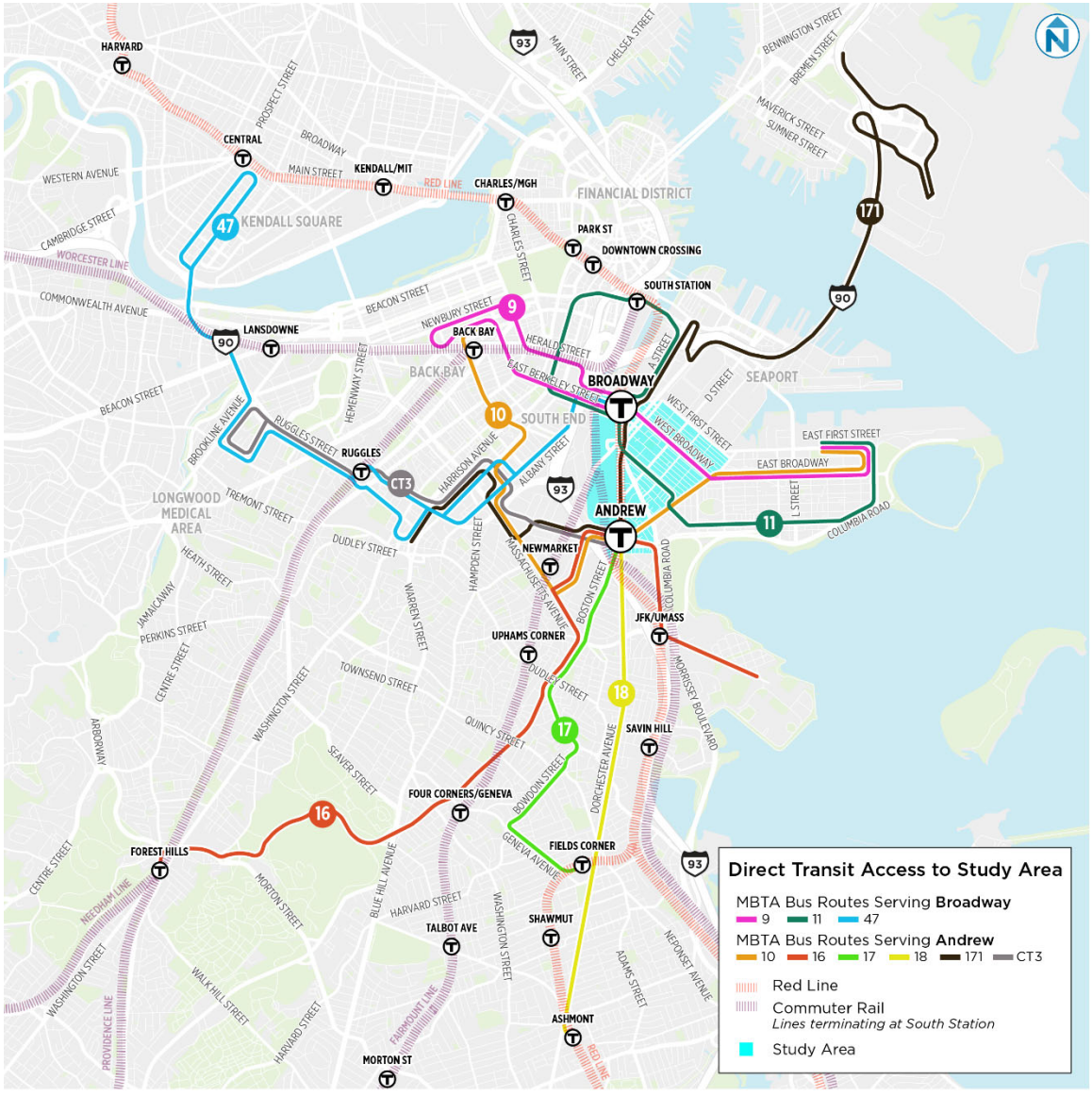


Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

BUS TRANSIT

The Study Area is served directly by nine bus routes: three bus routes connect at Broadway Station: Route 9, Route 11, and Route 47; and six bus routes connect at Andrew Station: Route 10, Route 16, Route 17, Route 18, Route 171, and CT3. The Route 5, which ran mostly identically along the eastern section of the Route 10 and connected to JFK/UMass via Andrew was discontinued in May 2019 as part of the Better Bus Project near-term changes. An overview of bus transit in the Study Area is provided in this section with a more detailed summary provided as Appendix C.

Figure 5-20 Bus Transit Directly Serving the Study Area



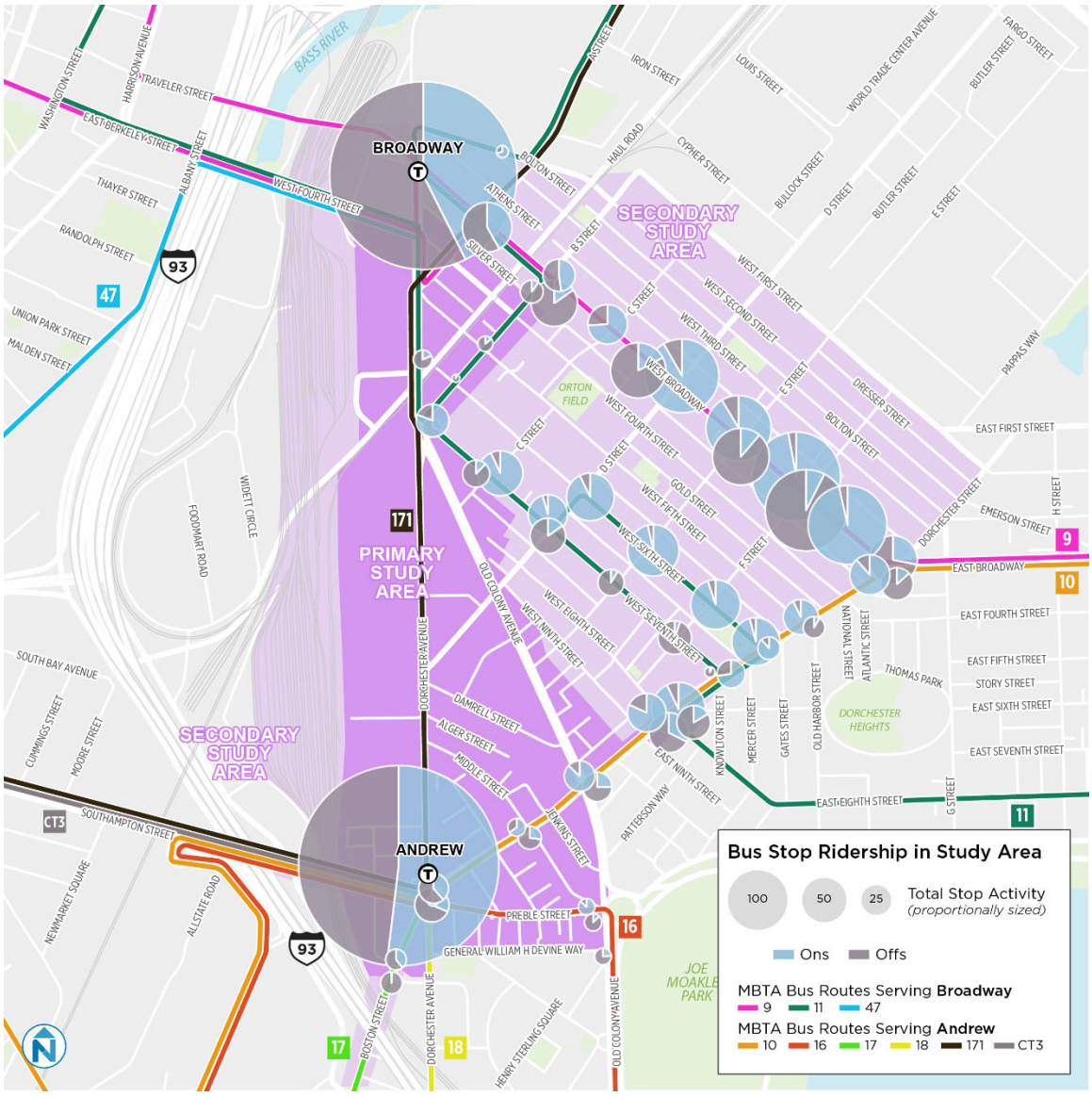
Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

The routes can be grouped in these categories:

- South Boston with Connection to Downtown: Route 9, Route 10, Route 11
- Crosstown: Route 16, Route 47, CT3
- Other: Route 17, Route 18, Route 171

Bus Ridership in the Study Area

Figure 5-21 Bus Stop Activity in Study Area



Source :MBTA Ridership Fall 2019

Of bus ridership activity occurring within the Study Area, Andrew and Broadway stations have by far the largest stop activity. West Broadway, served by Route 9 has steady ridership along the corridor approaching Broadway Station. West Sixth Street and West Seventh Street, served by Route 11, and Dorchester Street served by Route 10 also have moderate

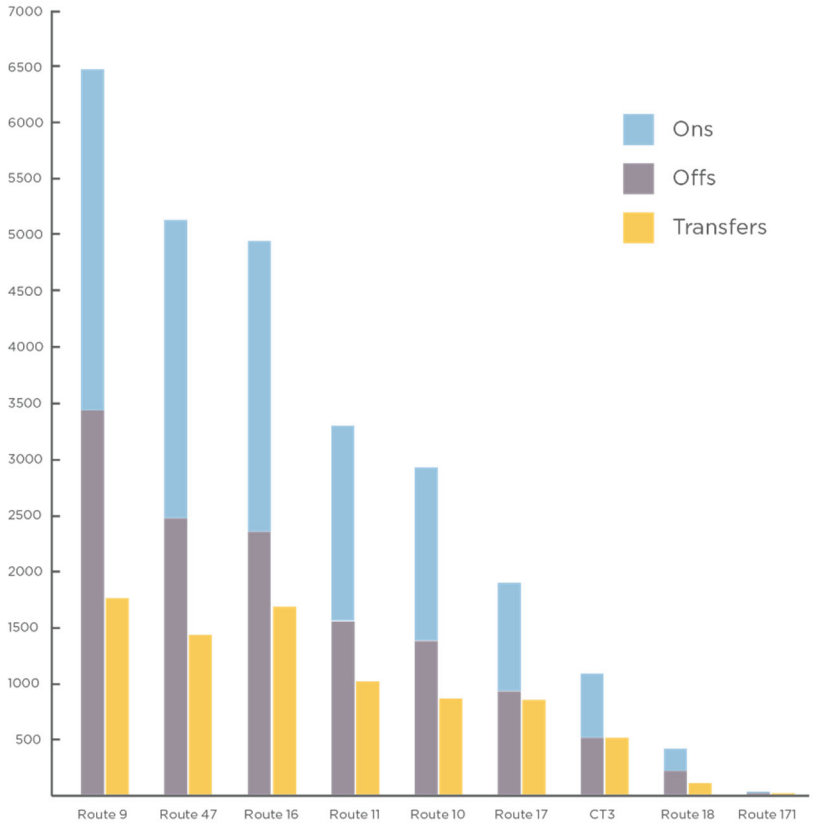
bus ridership activity. Although Route 171 runs along Dorchester Avenue, there are no stops along this corridor in the Study Area as this route only serves Andrew Station.

Bus Ridership for Routes Serving the Study Area

Total bus ridership for routes that serve the Study Area vary widely. Route 9 is the highest with nearly 6,500 daily weekday trips. Route 47 and Route 16 both have approximately 5,000 daily weekday trips. Route 11 and Route 10 have between 3,000 and 3,500 daily trips. Route 17 has 2,000, CT3 around 1,000, Route 18 around 500, and Route 171 less than 100.

Transfers account for between 1,500 and 2,000 total boardings and alightings on Route 9, Route 47 and Route 16. Transfers account for nearly half the ridership activity on Route 17 and the CT3 (see Figure 5-22).

Figure 5-22: Total Bus Ridership for Bus Routes Serving the Study Area



Source: Origin-Destination-Transfer (ODX) Model data Fall 2017

TRANSIT ACCESS TO AND FROM THE STUDY AREA

Access Within an Hour

While transit modeshare to and from the Study Area are not as high as surrounding areas, the transit access to and from the Study Area is expansive. During peak periods, Downtown,

Kendall, Back Bay, and the Seaport - four of the region's key job centers - are within a 30-minute transit commute; Logan Airport and the Longwood Medical Area as well as all areas along the Red Line, the Blue Line, and the Orange Line are within a 45-minute transit commute during peak. Because of the Red Line connection at South Station to the Study Area, many areas along the commuter rail are within a 60-minute transit ride during peak periods. Most commuter rail stations within 10 miles of downtown Boston have access to the Study Area within an hour (see Figure 5-23).

Transit access remains similarly high at midday off-peak. Notable areas that have lower transit frequency at midday are along the Mattapan Line, areas of Dorchester, East Cambridge, Watertown, Newton, Dedham and Milton. These drops in access mostly have to do with decreased frequencies along commuter rail and bus lines during midday (see Figure 5-24).

While transit access to and from the Study Area is served by frequent rapid transit and bus connections and far-reaching commuter rail service, the transit access maps represent scheduled travel and transfer times. As congestion worsens, Red Line trains regularly run at reduced headways, and all buses serving the Study Area have run times higher than scheduled for most or all trips, what should be a 30-minute transit trip may turn into something much longer. Although a very bad travel day may only happen a small percentage of the time, unreliable and wide-ranging travel times result in transit riders having to plan for the bad days so as to not miss shift times or appointments. Poor reliability also reduces riders' satisfaction with transit and is a major reason for transit systems' ridership loss.

Direct Access vs Access with a Transfer

The Study Area has direct access to Downtown Boston, South Boston, Back Bay, Dorchester, and all areas along the Red Line and the nine connecting bus routes. A large proportion of the rest of the urban core and any area along a commuter rail line connecting at South Station is connected by a single transfer trip to and from the Study Area. Because of the importance of the Red Line to the overall MBTA network, many bus routes connect to the Red Line, as well as all other rapid transit except for the Blue Line. Although not far distance-wise, many areas in the northern core and in the North Shore only have multi-transfer access to the Study Area. This is partially due to commuter rail lines that serve North Station instead of South Station and lack direct access to the Red Line, and the communities of Everett, Chelsea, Revere, and Lynn that have inadequate transit connections despite being dense communities relatively close to Downtown (see Figure 5-25).

Figure 5-23 Areas Accessible Traveling to Study Area via Transit — AM Peak

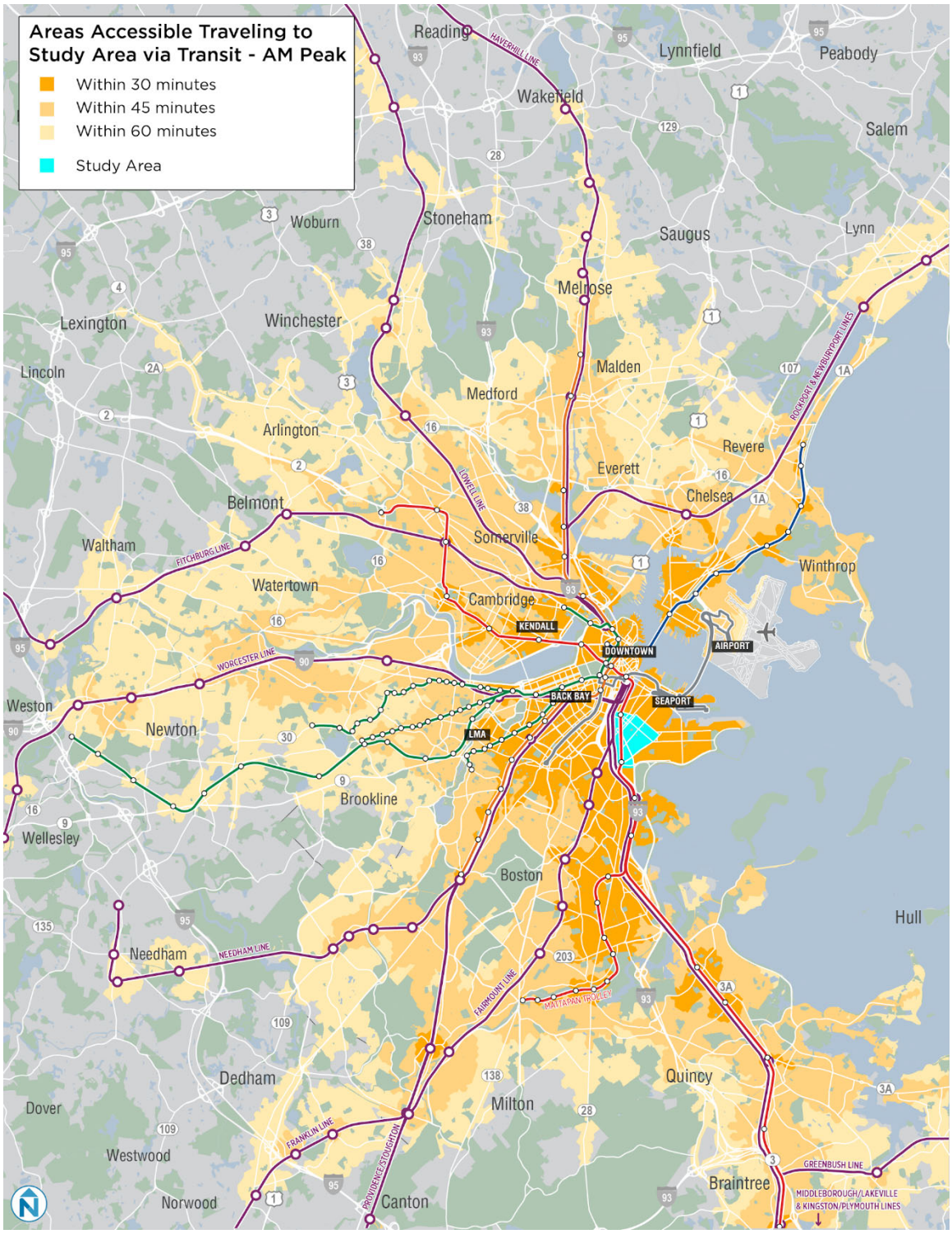


Figure 5-24 Areas Accessible Traveling to Study Area via Transit — Midday Off-Peak

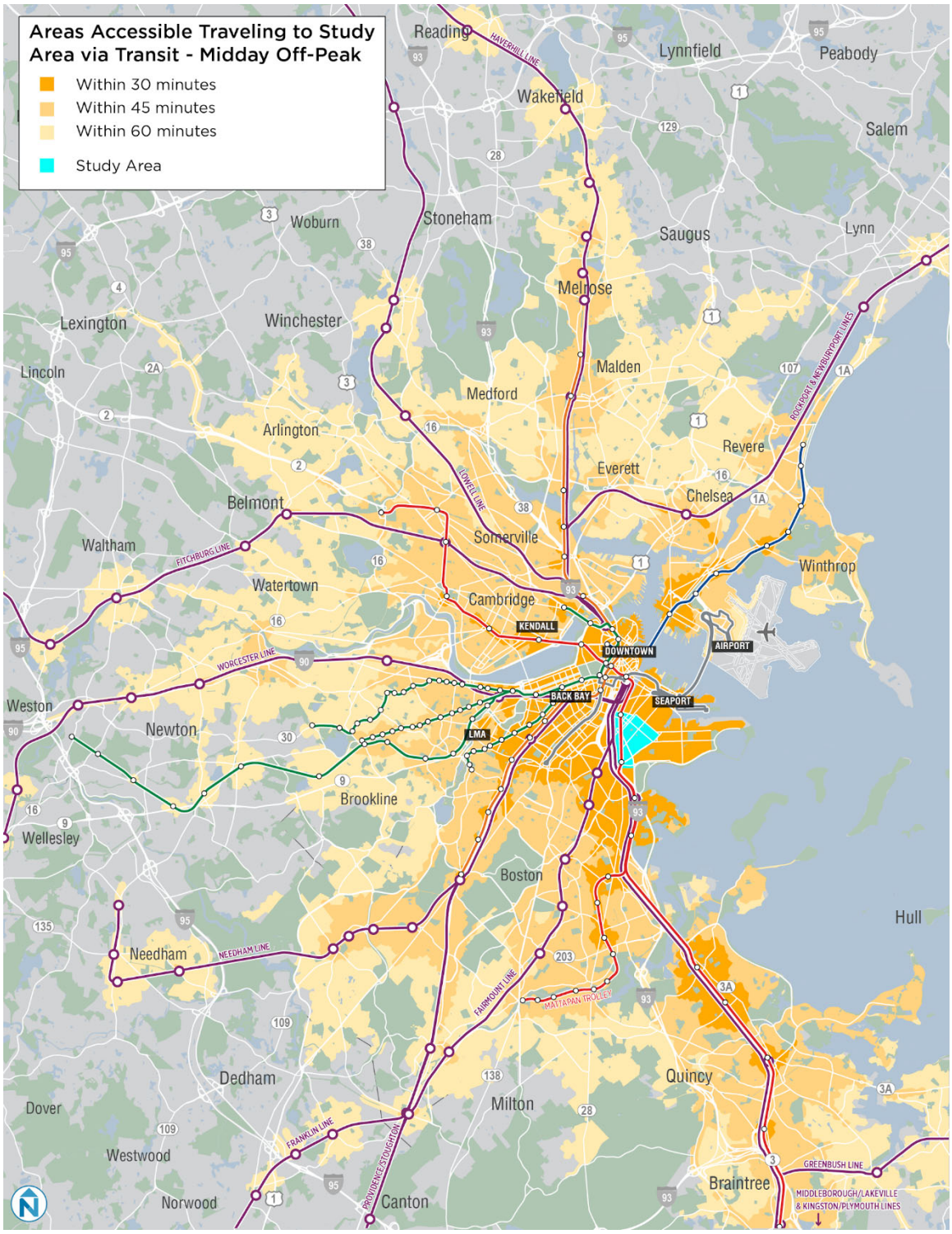
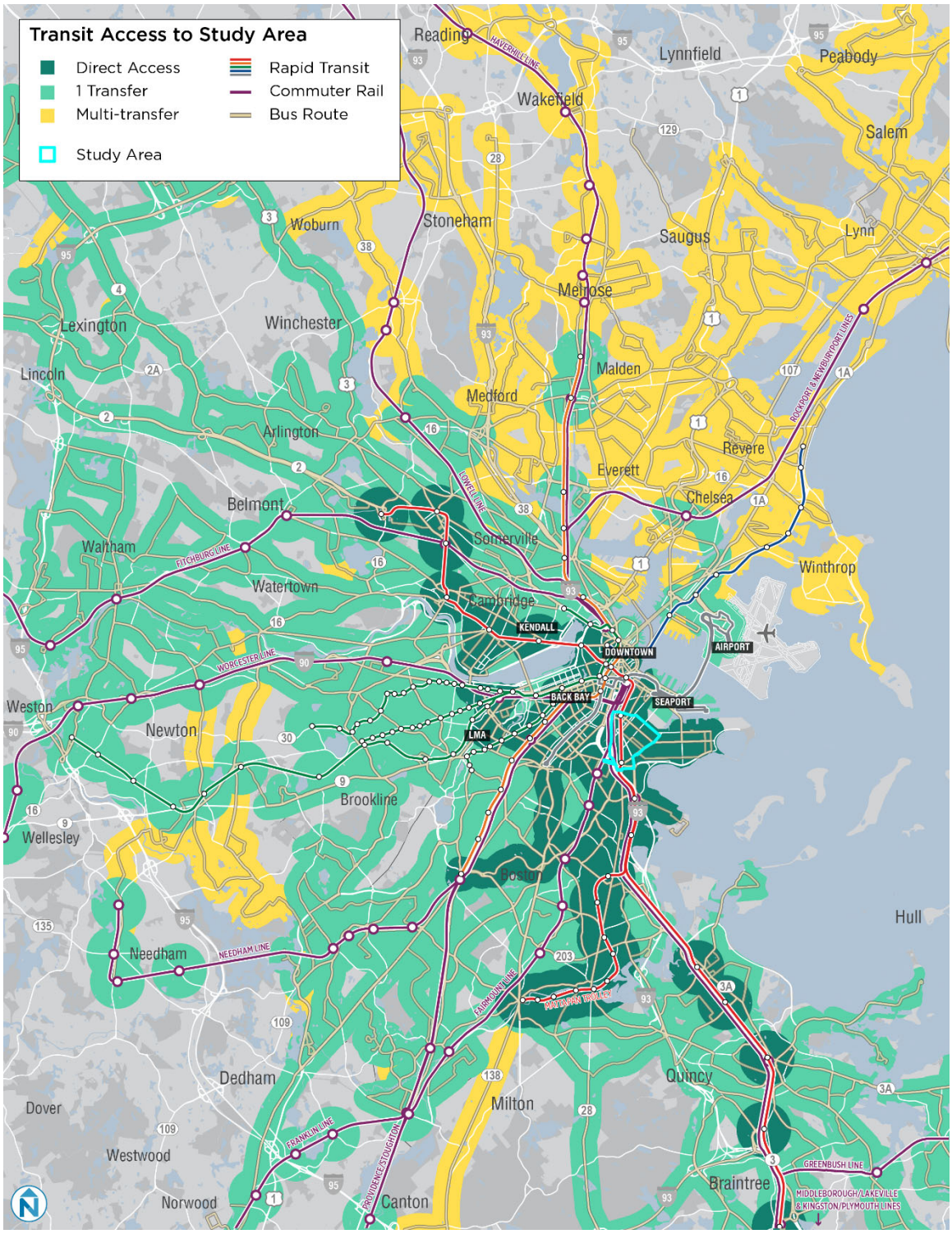


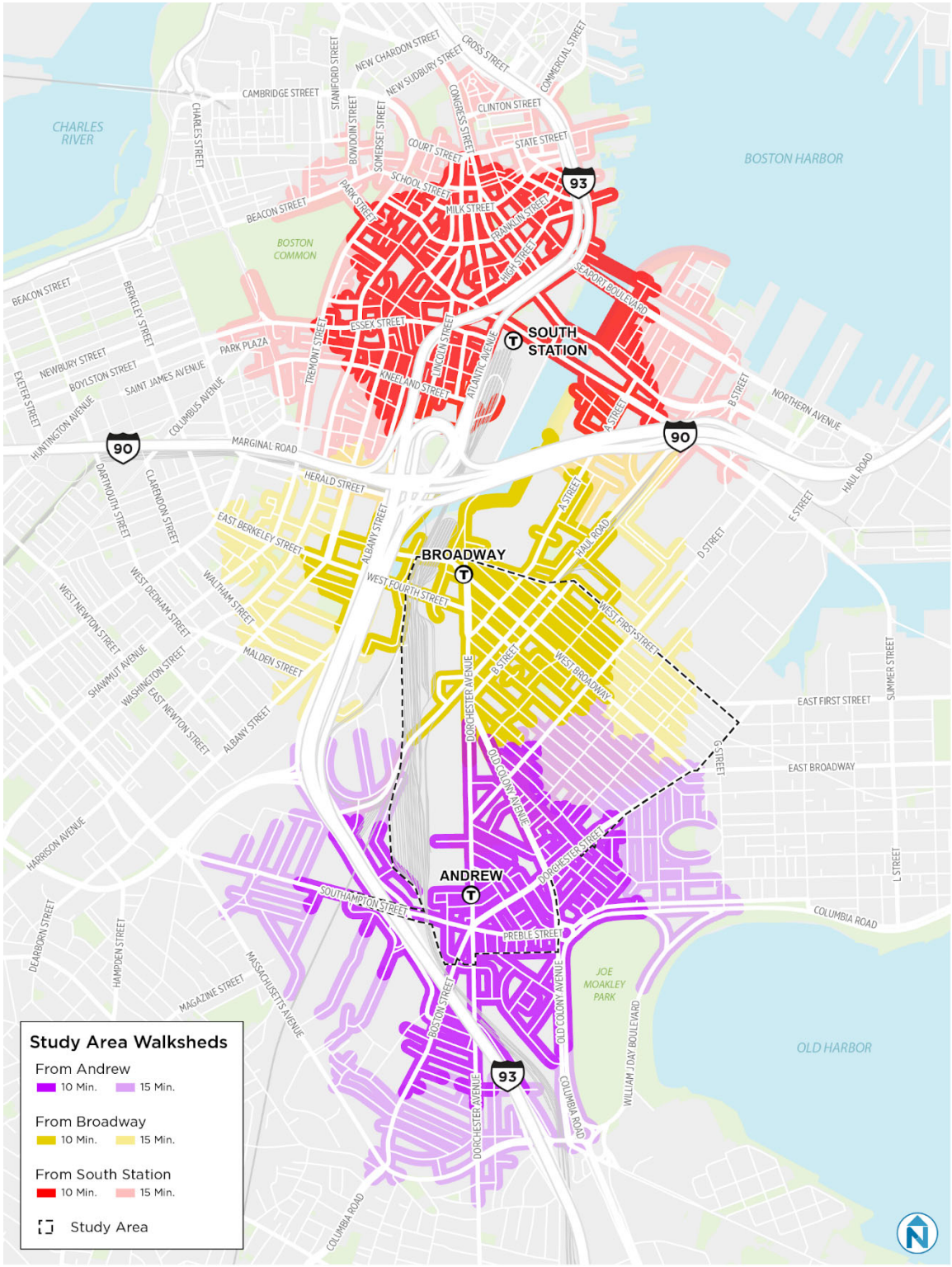
Figure 5-25 Transit Access to the Study Area



Pedestrian Access to Transit

Most transit riders begin and end their journey as pedestrians. Intersection density, street-crossing conditions, sidewalk conditions, and other factors affect how far a transit rider has to walk and how safe they feel to walk in order to access transit. Most transit riders are willing to walk 10 minutes to a frequent transit station, and many riders walk up to 15 minutes to access rapid transit. Except for the very eastern edge, all points within the Study Area are within a 15-minute walk of Andrew or Broadway stations. This can be seen in Figure 5-26. The street grid is very dense in most of South Boston and across I-93 into the South End and areas of Dorchester. South Station to the north also has high pedestrian access, although none of the Study Area is within a 15-minute walk of South Station. Much of this is due to the lack of a publicly-accessible pedestrian connection between Dorchester Avenue and South Station.

Figure 5-26 Pedestrian Access to Red Line Stations (walk times are calculated based on using the existing street network)



6 Existing Pedestrian Conditions

SIDEWALKS AND CROSSWALKS

> *"Sidewalks must be recognized not as a pedestrian amenity, but as the foundation of Boston's transportation network"*
>
> *~ Boston Complete Streets Guidelines*

The Boston Complete Streets guidelines, published in 2012, set forth design goals and criteria for sidewalks based on the context, which vary from a neighborhood main street, such as Dorchester Avenue, to local residential streets that permeate the Study Area. However, all sidewalks should address these key factors:

- ***Accessibility to all****. Sidewalks must be safe and accessible for all users, regardless of physical abilities or age.* There are numerous locations in the Study Area that do not meet ADA guidelines, described in more detail in the following sections.
- **All weather access.** Sidewalks must be designed to provide storage for snow in winter, and graded to eliminate stormwater "ponding," especially at transitions and ramps. Drainage issues and ponding are frequent throughout the Study Area. With increases in rainfall intensity, interventions to mitigate runoff are needed.
- **Vibrant Walking Environment**. Sidewalks must be comfortable, human-scaled, and vibrant with public art, cafes, benches, trees awnings and signage. Conditions vary significantly throughout the Study Area, with many stretches of sidewalk falling short of being part of a vibrant urban neighborhood.
- ***Stormwater Management.*** *Sidewalks must be designed to divert stormwater to the soil rather than to pipes wherever possible.* With the significant ponding that hinders pedestrian travel after rain events throughout the Study Area, an emphasis on green stormwater infrastructure will be essential.

The following sections describe existing conditions and needs on each major street corridor in the Study Area. Much of these observations are based on a site visit by members of the consultant team held February 7, 2020.

Dorchester Avenue

Dorchester Avenue is a historically commercial and industrial street, abutted by many large parcels with wide and frequent curb cuts. New residential developments near the MBTA Broadway and Andrew stations, however, are anticipated to increase pedestrian traffic, which in turn will require improvements to the pedestrian environment along the street.

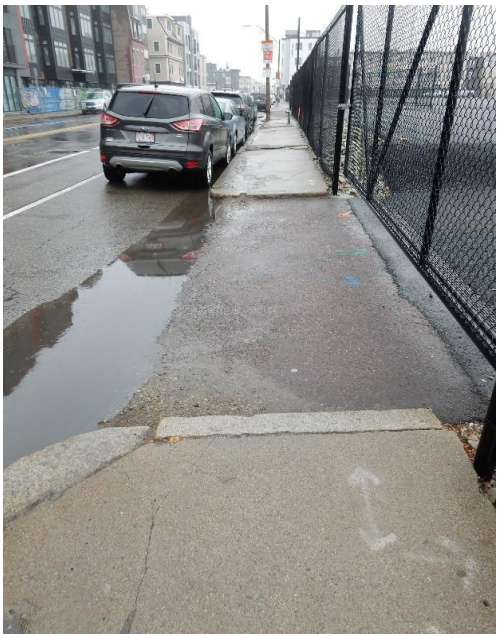
Sidewalks are provided along both sides of Dorchester Avenue for the length of the Study Area, but in many locations the sidewalks do not meet ADA accessibility standards and may

be difficult to use in inclement weather or by those with limited mobility. Some of the issues that present difficulty for sidewalk users along the length of the corridor include the following:

- Frequent and large curb cuts that create a near-constant exposure to crossing vehicle traffic;
- Poorly-defined sidewalk space across curb cuts and near building frontages that heightens the sense of increased exposure and encouraging vehicles to park near or in the pedestrian way;
- A lack of accessible crossings at driveways and at intersections that makes it difficult for users with limited mobility;
- Infrequent street lighting that result in visibility, comfort, and personal safety concerns;
- Deteriorating pavement quality that create an uneven and non-accessible path of travel; and
- Poor drainage that causes excessive pooling and creates difficulty for all sidewalk users in inclement weather.

While new residential and multi-use developments along Dorchester Avenue have reduced the number of driveways and provided ADA-accessible sidewalks and curb ramps, these improvements are limited in scope and do not connect to form accessible paths of travel along Dorchester Avenue. In addition to difficulty travelling along Dorchester Avenue, few marked crosswalks are provided to allow pedestrians to cross the street. Only a single crosswalk is provided - at the D Street intersection - in the half mile distance between Andrew Square and the Old Colony Avenue intersection. There is another 1,100’ gap between the Old Colony Avenue crosswalk and the next marked crossing at A Street. Crossings are more frequent near the MBTA Red Line stations.

Figure 6-1 Frequent Curb Cuts and Poor Drainage Make for a Difficult Pedestrian Environment



Several locations along Dorchester Avenue also provide unique challenges to pedestrian movement. One location is the intersection of Dorchester Avenue at Old Colony Avenue and B Street at West Seventh Street, as the two intersections effectively operate as a single intersection with mixed control. The Dorchester Avenue and Old Colony Avenue intersection is signal-controlled and provides concurrent pedestrian movements, encouraging pedestrians to cross with parallel streams of vehicle traffic. However, the intersection of B Street at West Seventh Street is stop controlled, and pedestrians and motorists are required to consider both roadway users traveling within the stop-controlled intersection as well as roadway users travelling through the signalized intersection of Dorchester Avenue and Old Colony Avenue. This irregular operation was observed to lead to many near-misses between all types of roadway users within the intersection.

North of the intersection with B Street and Old Colony Avenue, the bridge across South Boston Bypass Road is a major barrier to accessible pedestrian travel. In addition to the extremely poor drainage and pavement quality along the sidewalk, a large utility line occupies half of the sidewalk width across the bridge, often forcing pedestrians into the adjacent vehicle travel lanes.

Figure 6-2 Pools of Water after a Rain Event

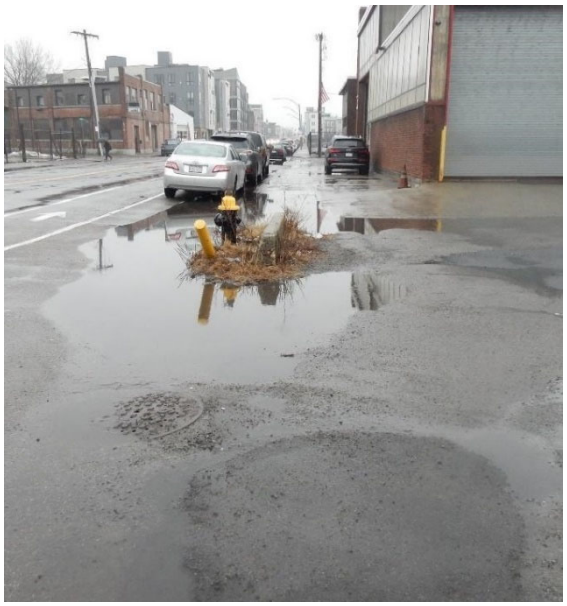


Figure 6-3 Bridge over South Boston Bypass Road

Old Colony Avenue

In general, pedestrian conditions along Old Colony Avenue are better than along Dorchester Avenue, though industrial areas of the corridor present similar challenges to the pedestrian experience. Large, commercial driveways exist, and vehicles at times park on the sidewalk. Sidewalk surfaces and curb ramps generally appear to be ADA compliant, though some exceptions were observed.

Only one crosswalk is provided across Old Colony Avenue in the half-mile segment of road south of the Old Colony Avenue and Dorchester Avenue intersection. Given the four lane cross section of Old Colony Avenue, this presents a major barrier for pedestrians. While curb ramps are provided for most street crossings along Old Colony Avenue, most crosswalks are unmarked and parked vehicles obstruct sightlines between pedestrians and motorists.

Figure 6-4 Car Blocking Sidewalk Forces Pedestrians into Busy Road

D Street

D Street is abutted entirely by commercial properties within the Study Area and has many of the same challenges for pedestrians as Dorchester Avenue. Large and frequent commercial driveways create many conflict points with turning motorists and present significant accessibility and drainage issues.

On a site visit on February 7, 2020, it was noted that large vehicles appeared to use a combination of the southeast bound bike lane and the adjacent sidewalk as informal parking along D Street. This practice significantly reduced the available space for pedestrians, reduced visibility at nearby driveway crossings, and may be contributing to the degradation of the sidewalk pavement.

Figure 6-5 Excessive Pooling after Rain Event

Figure 6-6 Blocked Bike Lane and Sidewalk

Dorchester Street & Preble Street

In contrast to the previous streets, Dorchester Street and Preble Street are primarily residential in character throughout the Study Area. The presence of street trees and more well-utilized parking contribute to a greater sense of separation from vehicle traffic, and marked crosswalks are provided at much greater frequency than along the north/south arterials. However, significant challenges to pedestrian travel are still present. Though the pavement condition on sidewalks is generally good, tree pits for the street trees narrow the effective sidewalk width (clear path of travel) in many places. Additionally, while marked crosswalks are provided, visibility between pedestrians and motorists is poor due to a lack of parking restrictions near the crosswalks.

Northern Neighborhood Streets

In general, the smaller streets in the northern section of the Study Area provide sidewalks on both sides of every street and crosswalks across all intersection approaches. However, sidewalks are often narrow; about 5' and immediately adjacent to a building face in many locations. This reduces the functional width of the sidewalks and negatively impacts the comfort level of pedestrians. In many cases the functional width is reduced even further by signs, light poles, traffic signal equipment, and other street furniture. As with other streets in the Study Area, driveways frequently interrupt the sidewalk and lead to parking areas with little to no separation from the sidewalk. While not as much an issue at driveways, severe drainage issues at curb ramps were noted during a site visit.

Figure 6-7 Signage Blocks Functional Width

Figure 6-8 Pooled Water at Crosswalks

Pedestrian Signal Equipment and Operations

Within the Study Area, traffic signals along Dorchester Avenue provide concurrent pedestrian signal phases without requiring pedestrian activation. One notable exception is the crossing of A Street along Dorchester Avenue, which is at a shallow angle and provides a green right-turn arrow for northbound motorists turning across the crosswalk. Pedestrian

signals along Old Colony Avenue require push-button activation and provide exclusive pedestrian phases.

USAGE

Pedestrian activity varies greatly, with areas of higher activity concentrated near the northern and southern limits of the Study Area near the Andrew Square and Broadway MBTA stations. Areas in between see far fewer pedestrian trips. However, infill development along both Dorchester Avenue and Old Colony Avenue is anticipated to contribute to increased pedestrian volumes. The figure below shows crossing volumes at each leg of key Study Area intersections. Detailed pedestrian crossing counts are included in Appendix D.

Within the Study Area, the Andrew Square Station transit hub and a network of bus routes provide rail and bus service to a large volume of passengers. These passengers generate pedestrian trips that utilize the sidewalk network. Using the MBTA Bus Ridership by Stop data, the locations in Figure 6-9 had the largest amount of boarding and alighting activity within the Study Area.

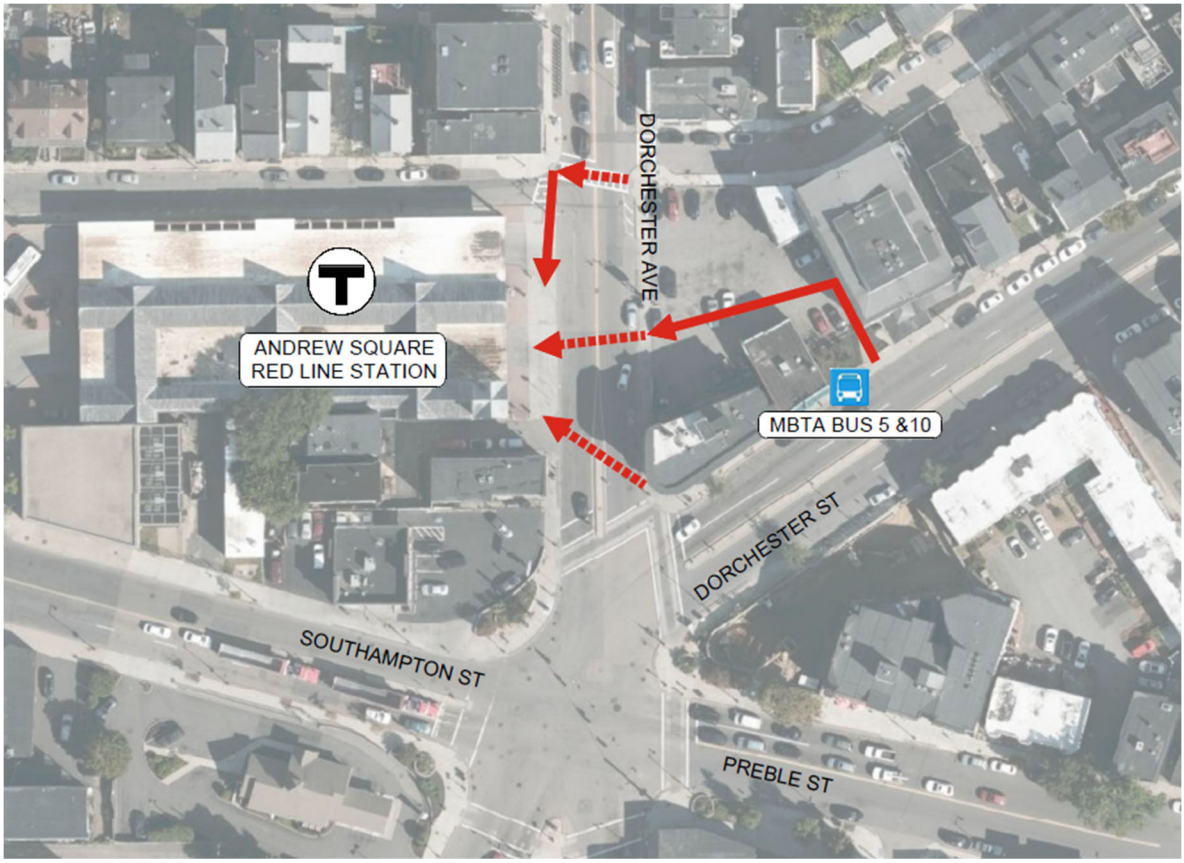
Figure 6-9 Pedestrian Boardings and Alightings by Location (2018)

LOCATION	BOARDINGS AND ALIGHTINGS PER DAY
Andrew Square Station Busway	9,379
Dorchester Ave/Dorchester St/Preble St/Southampton St/Boston St	352
Dorchester St at 8th St	757
Dorchester St at Old Colony Ave	262
Boston St at Fr Songin Way	107

With the high volume of ridership, proper pedestrian infrastructure is necessary to provide access to the transit locations. Figure 6-10 illustrates the highest locations for pedestrian crossings. Near Andrew Square Station, pedestrian activity may be even higher than the intersection count numbers suggest, as there are several paths of travel pedestrians use to access the Andrew Square MBTA Station. The diagram in Figure 6-11 illustrates several common access routes to the station that do not use the crosswalks of the main intersection.

Figure 6-10 Pedestrian Crossing Counts by Location

Figure 6-11 Pedestrian Access to MBTA Andrew Red Line Station from MBTA Bus 5 and 10 Dropoff Location



Given that southbound vehicles are frequently queued on the Dorchester Avenue intersection approach and northbound volumes are relatively low, many pedestrians opt to cross through gaps in traffic away from the intersection crosswalks. The 6' wide, concrete median along Dorchester Avenue is often used as a refuge island to facilitate this movement, though many pedestrians also cut through the 7-Eleven parking lot and cross directly

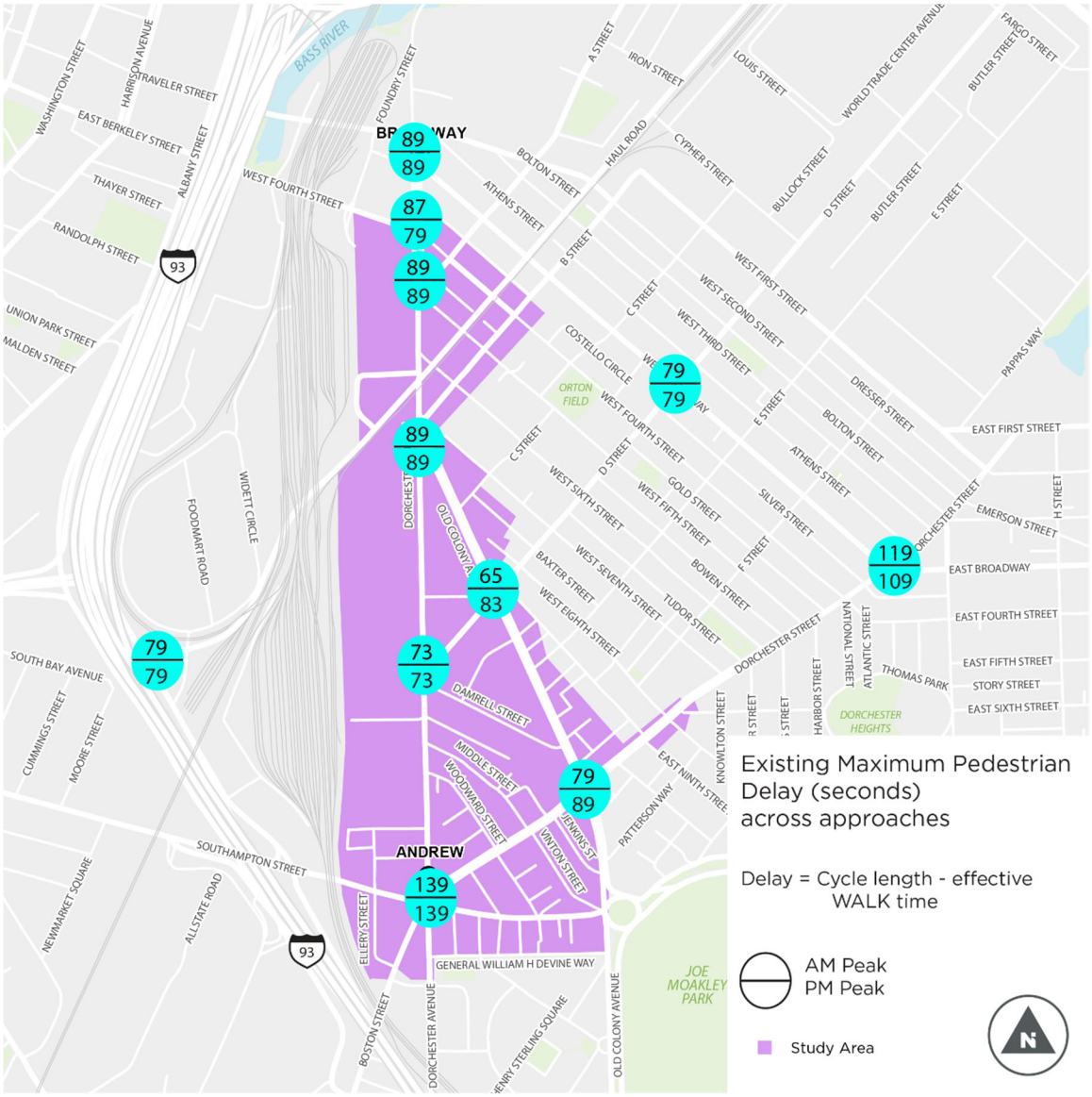
Figure 6-12 Pedestrians desire a direct and predictable path of travel

to Andrew Station further north away from the intersection. Also of note, a marked crosswalk is provided just north of Andrew Station along with a traffic signal intended to hold southbound vehicles in advance of the MBTA busway. No pedestrian or northbound vehicle indications are provided at this signal, leading to confusion as to who has the right-of-way, especially when southbound vehicles have a green light.

Pedestrian Delay

The maximum pedestrian delays are shown in Figure 6-13, which assumes a pedestrian arrives at the crosswalk just after the end of a signal's walk phase and must wait for the next signal.

Figure 6-13 Pedestrian Delay



The analysis shows that the highest pedestrian delays are at Andrew Square, and at Dorchester Street and Broadway. Higher pedestrian delays are typically associated with pedestrians being more likely to take risks and crossing against a signal, or away from a marked crosswalk. Field observations at Andrew Square indicated many people crossing away from the signalized intersection crosswalk, which is consistent with these concerns.

7 Existing Bicycle Conditions

Infrastructure in Study Area

Figure 7-1 Bicycle Lane on Dorchester Ave Ending Abruptly as Intersection Approaches

Bicycle facilities are provided sporadically throughout the Study Area, with dedicated bike lanes mostly along Dorchester Avenue and few other dedicated facilities on other roadways. (See Figure 7-2). Along Dorchester Avenue, standard bike lanes are provided between Andrew Square and Old Colony Avenue. However, the bike lanes end and transition to shared lane markings north of Old Colony Avenue and south of Andrew Square. North of the Old Colony Avenue and Dorchester Avenue intersection, a buffered southbound bike lane is provided between West Fourth Street and Old Colony Avenue and a northbound bike lane is provided between A Street and West Fourth Street. Shared lane markings are provided along northbound Dorchester Avenue between A Street and Old Colony Avenue.

Standard bike lanes are also provided in both directions along A Street, and in the southwest direction along D Street. Shared lane markings are provided along northeast D Street from Dorchester Avenue to Old Colony Avenue, at which point only bicycles are allowed to continue straight along D Street. No other dedicated bicycle facilities are provided throughout the Study Area.

Despite the provided bicycle facilities, people riding bicycles experience high levels of traffic stress on the major corridors in the Study Area. The results of the level of traffic stress analysis in the Study Area, which takes existing bicycle facilities as well as the vehicle traffic

volumes, speed limits, and existing on-street parking next to bicycle facilities into account and correlates that to the comfort one would experience riding a bicycle, can be seen in Figure 7-3. It shows that the major corridors like Dorchester Avenue, Dorchester Street, and Old Colony Avenue, as well as other streets connecting riders outside the Study Area like B Street, D Street, and West Fourth Street, are all very high-stress streets. High-stress streets or bicycle facilities do not encourage more people to ride a bicycle for everyday travel.

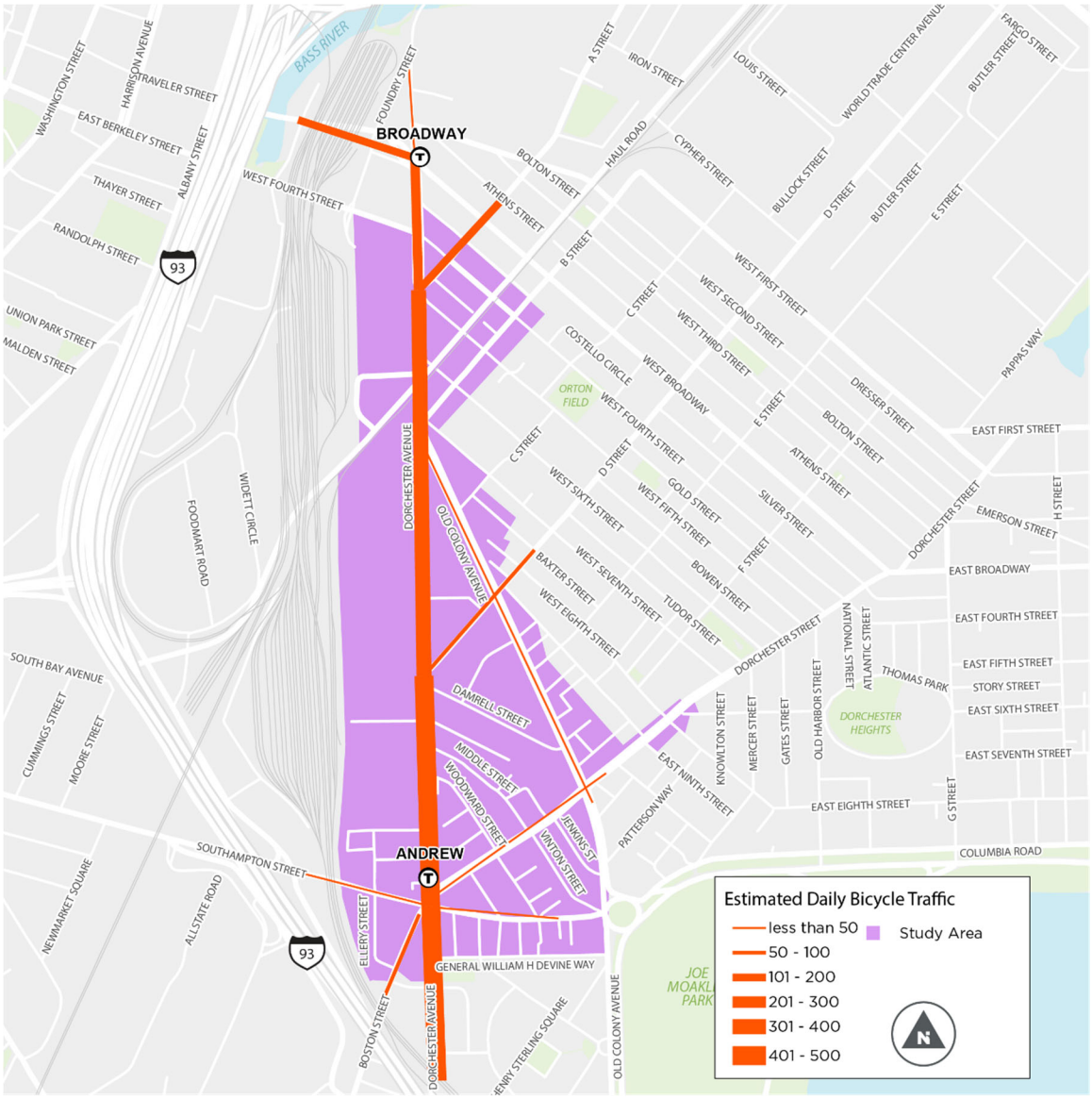
Figure 7-2 Existing Bicycle Infrastructure in Study Area

Figure 7-3 Bicycle Level of Stress in Study Area

USAGE

Bicycle usage is moderate along Dorchester Avenue (which is indicated in Figure 7-3 as a high-stress bicycle route), even though it provides a direct link to downtown Boston from points south of the city center. With a lack of dedicated bicycle facilities and more circuitous routing, other major roadways see far less bicycling volumes. Traveler Street, D Street and A street provide primary connections from Dorchester Avenue into the city. This is due to the short closed section of Dorchester Avenue adjacent to the United States Postal Service facility, as well as the more challenging 4-lane section of Dorchester Avenue that lacks dedicated bicycle facilities. Figure 7-4 below shows estimated bicycle volumes considering both daily counts by the Boston Transportation Department and the turning movement counts at each intersection. Detailed bicycle counts are in Appendix E.

Figure 7-4 Existing Bicycle Usage in Study Area



Other Relevant Field Observations and Deficiencies

While continuous bike lanes are provided along large stretches of Dorchester Avenue, they are often difficult to use for a variety of reasons. Poor pavement quality and drainage issues require cyclists to frequently ride outside of the bike lane, especially in inclement weather. In addition to pavement issues, trucks and other large vehicles often park along Dorchester Avenue and are wider than the existing parking lane. This causes the vehicles to take up part of the bike lane and force cyclists into the general travel lane. Past public input from bicycle riders in particular noted that the Old Colony/Dorchester Avenue intersection felt unsafe to ride through, as the existing bicycle facilities to not extend through the intersection.

8 Parking

Parking is often a highly contentious issue when new development is proposed, especially in dense neighborhoods like South Boston where off-street parking supply is limited and competition for on-street spaces is high. Providing too little parking for new development can lead to overflow in the surrounding neighborhoods if regulations are not provided or enforced; whereas, providing an abundance of parking – particularly free off-street parking – can lead to increased traffic congestion and other associated problems. As such, this plan must incorporate a comprehensive parking management strategy to address the many competing concerns and will include on-street regulations, off-street public and private parking policies, and zoning requirements.

The first step in the process was to document existing parking conditions within the Study Area. On-street and off-street facilities were assessed, as were parking policies within the Study Area, including required parking ratios for new development under zoning, and parking limitations from the South Boston Parking Freeze.

Curbside/On-Street Parking Regulations

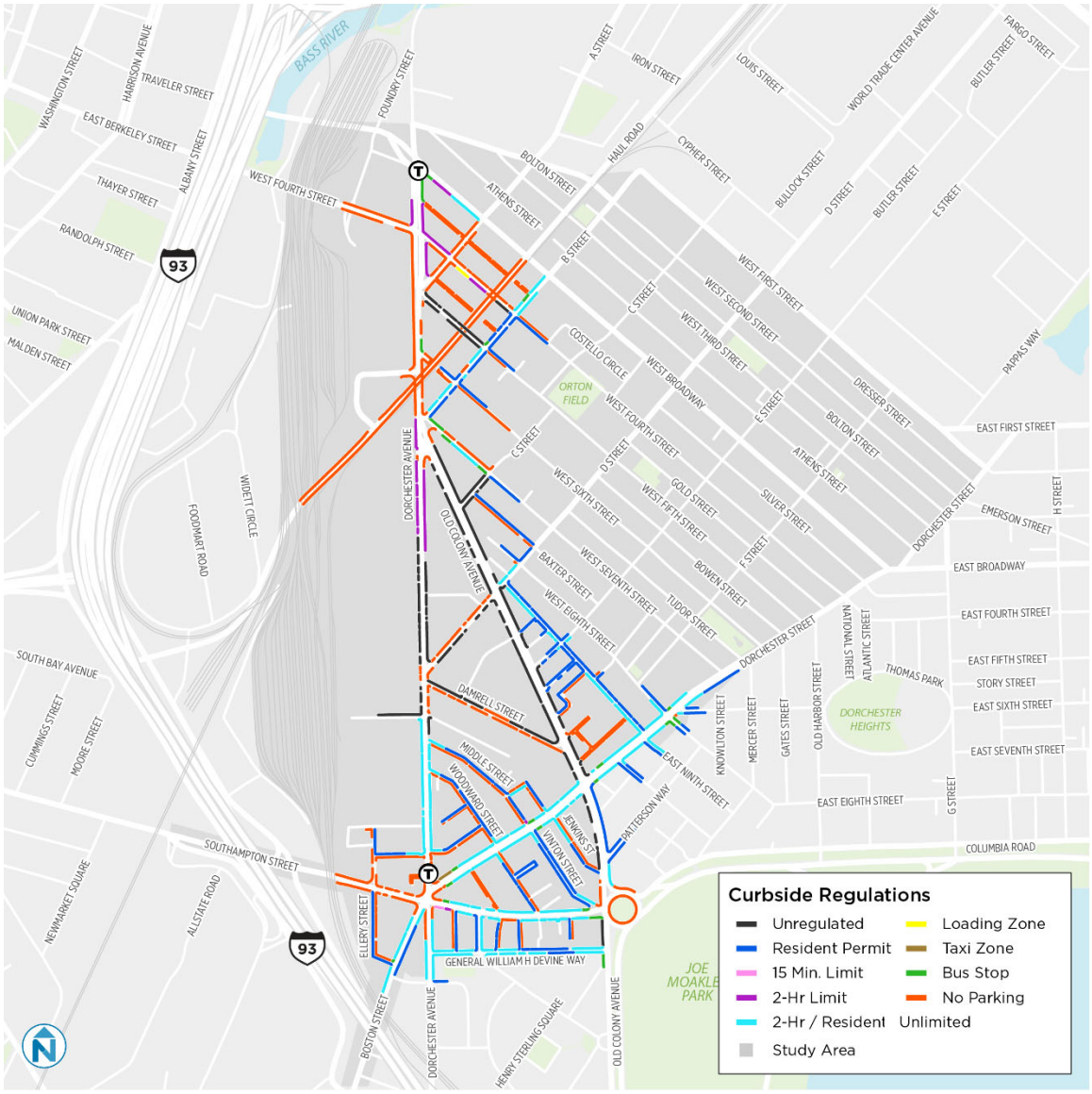
As shown in Figure 8-1, on-street parking regulations vary throughout the Study Area. (A complete inventory of the Secondary Study Area was not undertaken, as much is Resident Permit parking only.) This makes for a potentially confusing parking environment, and one ripe for misuse (e.g. long-term on-street parking), particularly as the area develops and on-street parking becomes more competitive.

Based on our analysis, there are at least nine major curbside conditions and/or regulations within the Study Area. This includes:

- **Unregulated** areas with allowed parking by any user at any time for any period of time;
- **Resident Permit** parking on local side streets for those with valid South Boston Neighborhood permits;
- **2-Hour** time limited parking areas primarily;
- **2-Hour / Resident Permit** (Unlimited) areas in buffer zones between commercial and residential areas;
- **15-Minute Limit** parking to provide short-term parking near convenience retail;
- **No Parking** areas;
- **Loading Zones** for commercial vehicles;
- **Taxi Zones** for drop-off and pick-up; and
- **Bus Stops** for MBTA buses.

As shown in Figure 8-1, unregulated parking areas are located along stretches of Dorchester and Old Colony Avenues lined by industrial or non-retail commercial uses. Based on site visits, parking was not highly utilized. 2-hour time limited parking areas were identified along a short stretch of Dorchester Avenue to manage parking near a small cluster of parking-intensive fitness centers and showrooms. 2-Hour / Resident Parking zones are found primarily around Andrew Square to provide parking to ground floor retail customers and nearby residents; whereas resident permits are located only on local streets away from the major corridors. No parking areas are primarily found on major corridors and on narrow side streets near the Broadway Red Line station.

Figure 8-1 Curbside Regulations



SOUTH BOSTON PARKING FREEZE – KEY FINDINGS

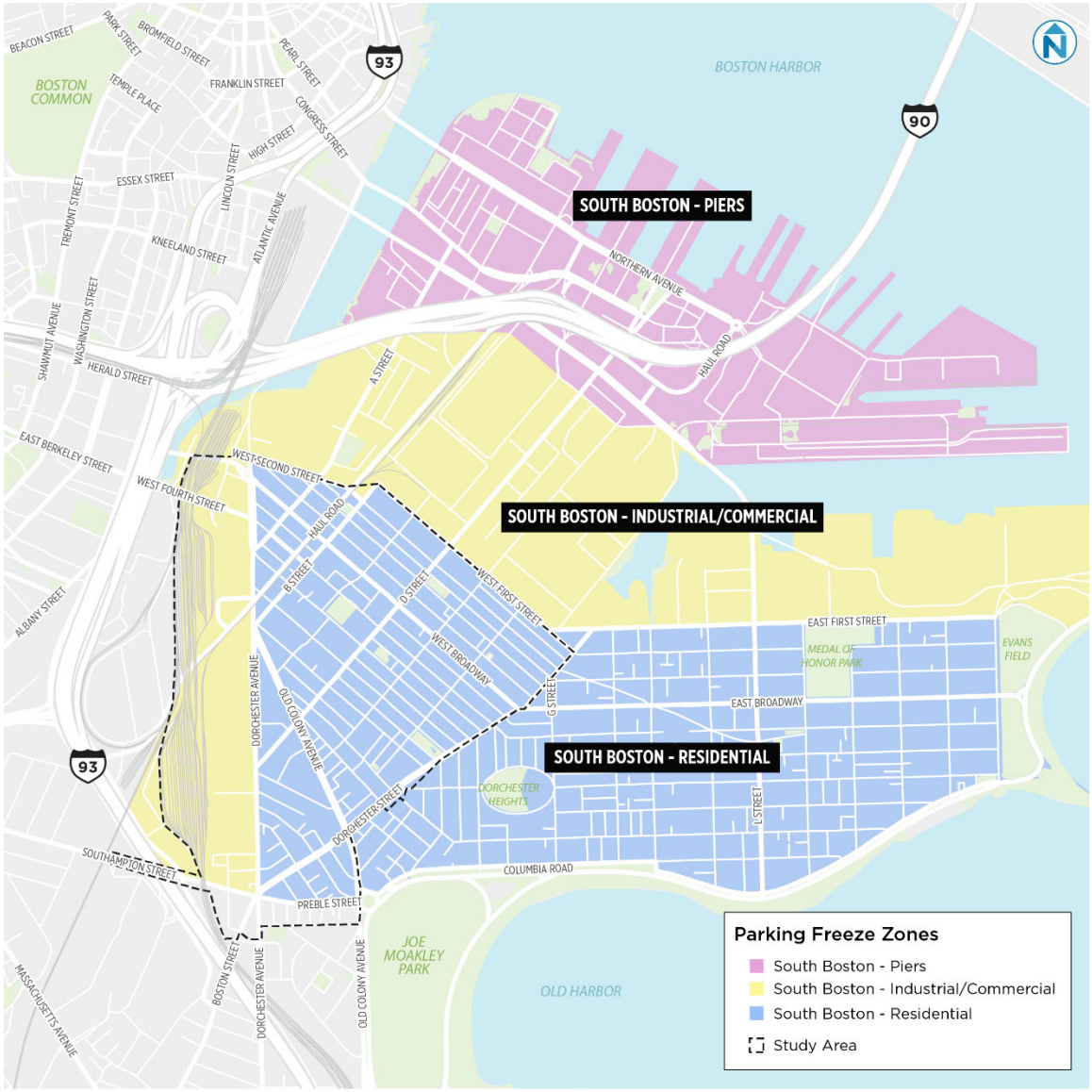
The South Boston Parking Freeze went into effect in 1993 (regulations were adopted in 1994 and amended in 2006 0 and is managed by the Air Pollution Control Commission. The South Boston Parking Freeze is one of three parking freeze areas enacted as part of air quality mitigation measures taken during the Central Artery/Tunnel project. The Parking Freeze allows for a maximum of 30,389 off-street parking spaces in the larger South Boston neighborhood and applies primarily to off-street parking spaces supporting commercial and industrial uses. Residential parking spaces are largely excluded from the count; with some exceptions as described in subsequent sections below.

Within the South Boston neighborhood, three parking zones were established, each with different parking parameters.

- **South Boston Piers Zone:** Parking spaces for commercial uses, and any residential parking exceeding one per unit. 20% of spaces must be made available to cars after 9:30am (originally 10%);
- **South Boston Industrial/Commercial Zone:** The same requirements as South Boston Piers; minus the 20% provision; and
- **South Boston Residential Zone:** Parking for residential and commercial is not included in the freeze, except parking that is provided for off-site commercial users in the other two subzones.

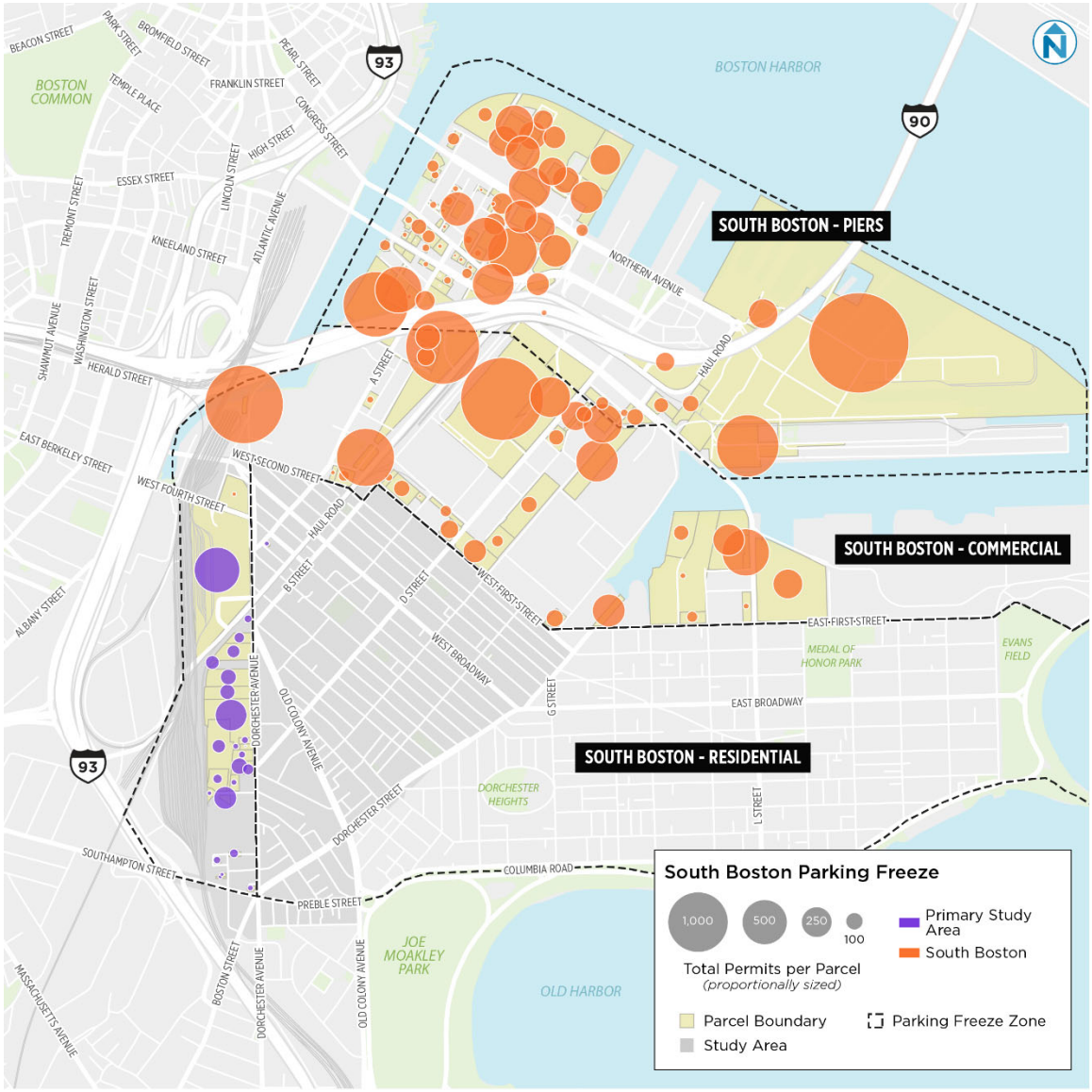
As shown in Figure 8-2, the Study Area includes areas within the South Boston Industrial/Commercial Zone and the South Boston Residential Zone.

Figure 8-2 South Boston Parking Freeze Zones



As of September 2019, 1,595 spaces were available in the parking freeze "bank". Developers who intend to construct new parking must submit an "Application for Parking Freeze Permit" that details facility square footage, existing spaces on the site, and proposed new spaces. It also includes some information regarding parking management. See Figure 8-3. For more information, see https://www.boston.gov/sites/default/files/file/document_files/2017/08/application-for-parking-freeze-permit_1.pdf

Figure 8-3 Parking Freeze Parking Allocations by Parcel



Within the Study Area, 1,856 parking spaces are included in the freeze, allocated to 25 parcels ranging from 4 to 625 permits/spaces (See Figure 8-4). Permits currently allocated to parcels will remain with them should they be redeveloped; however, any additional commercial parking would require an application.

Given the scale of the Dorchester Avenue development program included in PLAN: South Boston Dorchester Avenue, traditional parking rates would lead to new parking construction beyond the 1,595 spaces currently available in the freeze bank. Current parking ratios for office and commercial in nearby areas (i.e., the Seaport) are approximately 1 per 1,000 sf of development, which are very low by historic standards. With more than 5 million sf of commercial development called for under the proposed PLAN buildout, at least 5,000 spaces

would be needed under current requirements. This would far exceed what remains in the freeze bank. Furthermore, with considerable development proposed in the Seaport (Piers Zone), the number of spaces available will be lower. Although an appeals process is provided, it is unlikely to result in parking above the freeze limit. Policies to further reduce parking ratios will be needed for the buildout to occur. Figure 8-4 summarizes the parking space allocations remaining in the Study Area.

Figure 8-4 Study Area Parking Space Allocations

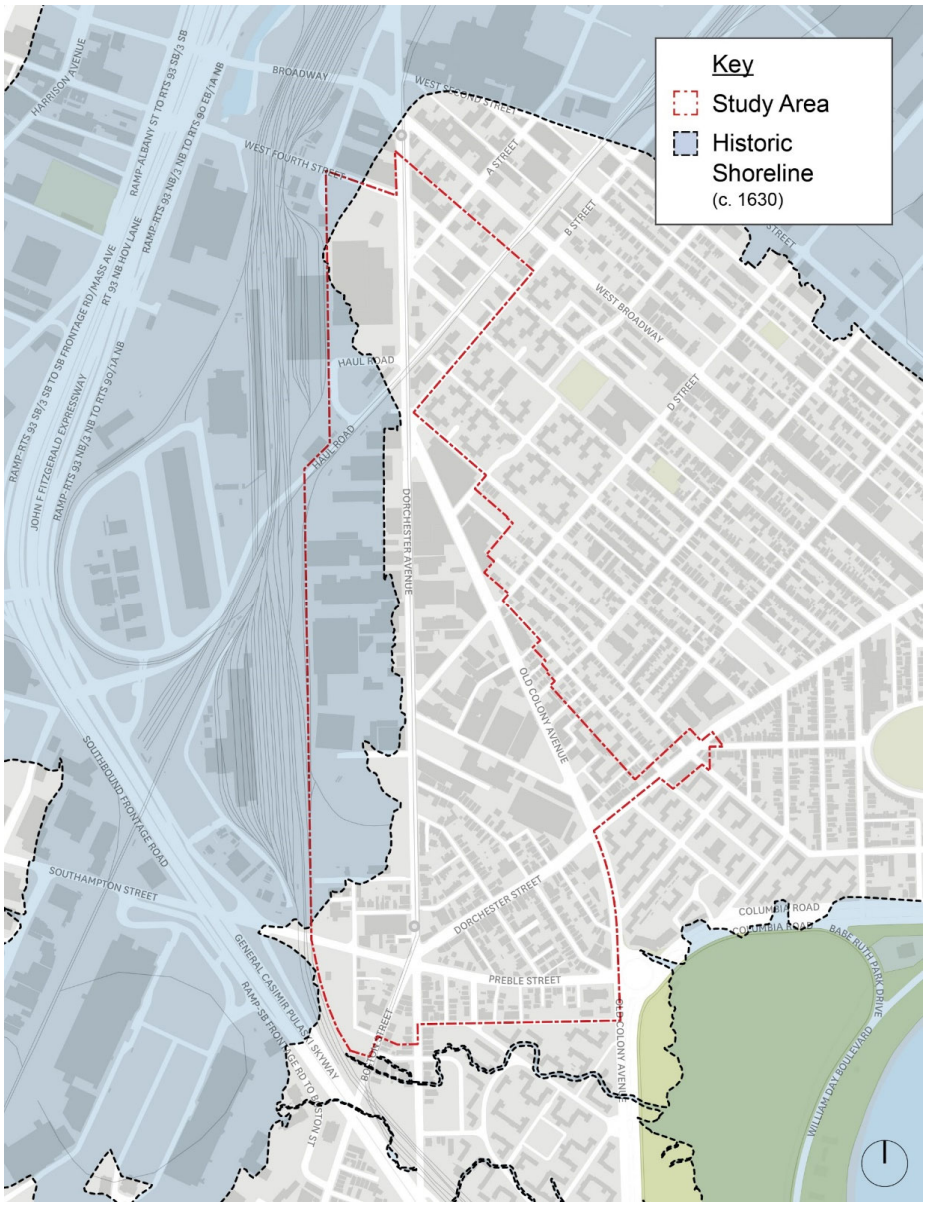
Parcel Address	Parcel ID	Total permits
163 Dorchester Avenue	600005001	625
371 Dorchester Avenue	700014000	310
475 Dorchester Avenue	700029000	165
429 Dorchester Avenue	700023000	90
345 Dorchester Avenue	700010000	84
363 Dorchester Avenue	700011000	77
323 Dorchester Ave	700008000	65
4 Alger Street	700027000	62
307 Dorchester Avenue	700007000	57
455 Dorchester Avenue	700024000	45
297 Dorchester Avenue	700006000	41
2 Alger Street	700027001	32
1 Ellery Street	700056000	30
285 Dorchester Avenue	700002000	25
8 Wadleigh Place	700060000	22
421 Dorchester Ave	700019000	20
409 Dorchester Avenue	700016000	20
498-510 Southhampton Street	700079000	15
409 Dorchester Avenue	700017000	15
10 Alger Street	700026000	15
21 A Street	600168000	11
511 Dorchester Avenue	700028000	10
15 Ellery Street	700066000	8
Southampton Street	700065000	8
415 Dorchester Avenue	700018000	4
TOTAL		**1856**

Changes to the parking freeze regulations are currently under review; however, any changes are not likely or intended to increase the total number of spaces allowed under the freeze. However, it may be an opportunity to review how spaces are allocated. For example, shared parking currently requires any space used for commercial use at any time to be included in the freeze. This may result in more parking being built, particularly in mixed-use projects where commercial parkers could use spaces built for residential use.

9 Resiliency

The historic shoreline (c. 1630) runs parallel along Dorchester Avenue. A large portion of the Study Area was historically under water.

Figure 9-1 Historic Shoreline

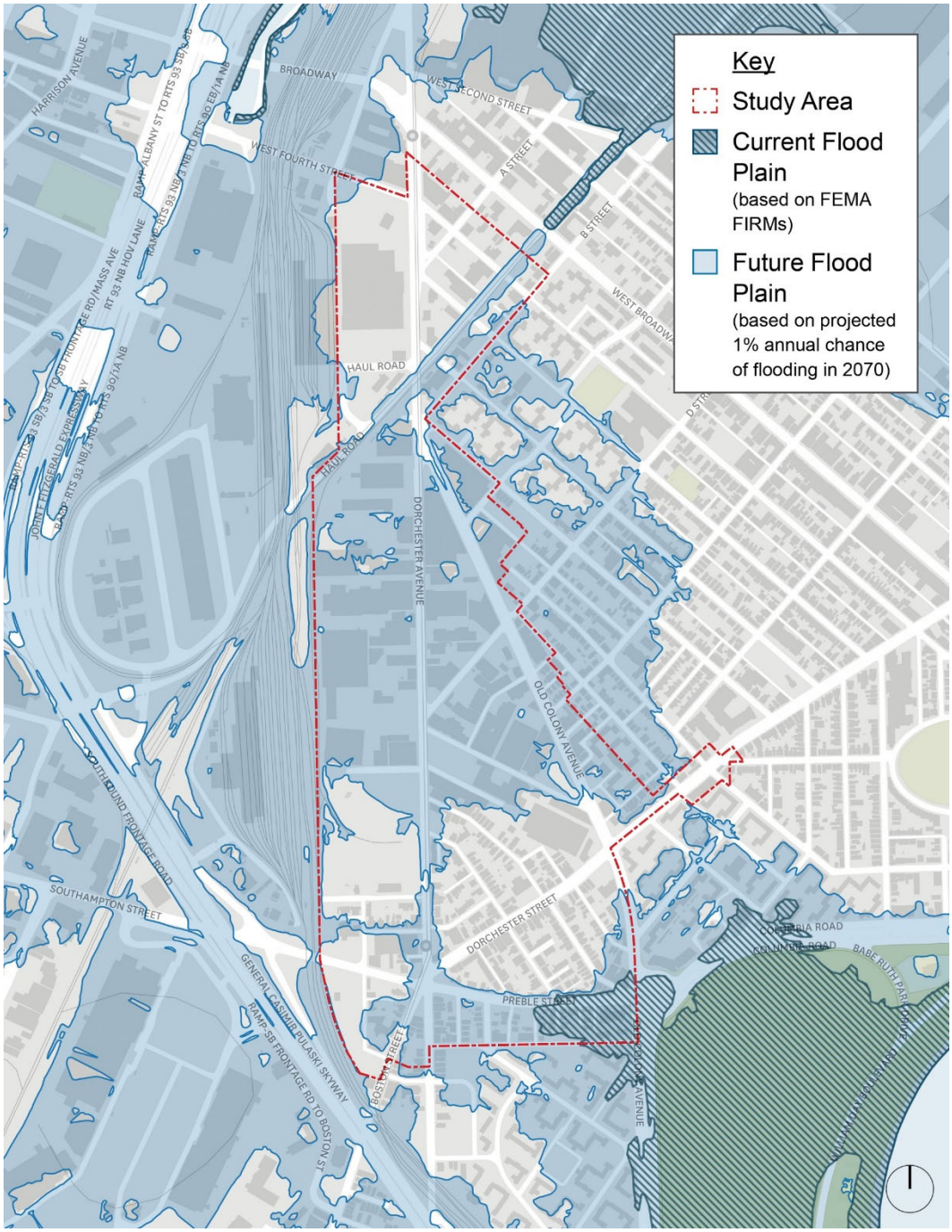


Source: Massachusetts Office of Coastal Zone Management.

Current and Future Flood Plain

While the current flood plain (hatched area, based on FEMA Flood Insurance Rate Maps (FIRMs) minimally impacts the Study Area, the projected future flood extent (based on a 1% annual chance of inundation in 2070 with 40" of sea level rise) covers the majority of the Study Area.

Figure 9-2 Current and Future Flood Plain

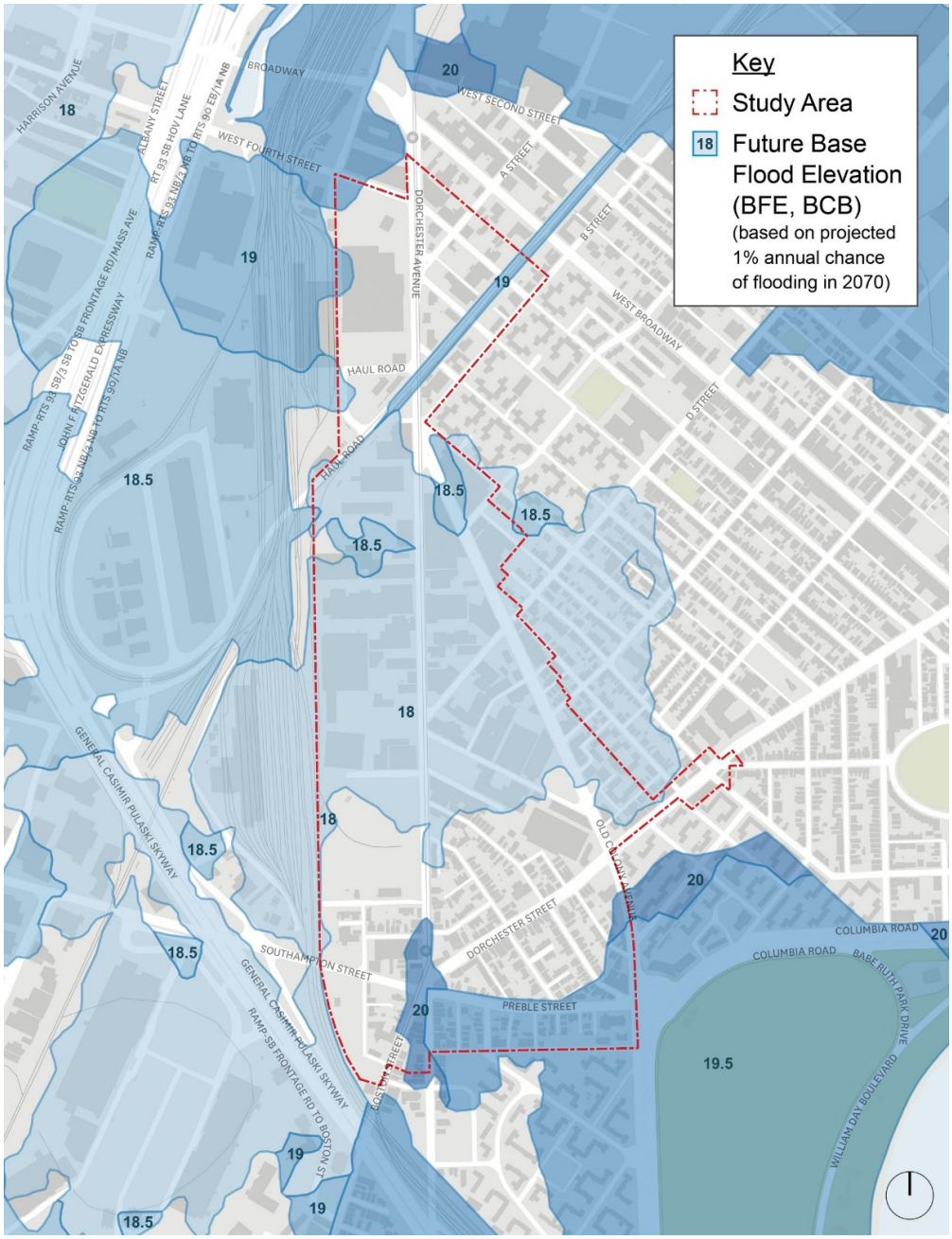


Source: Boston Harbor Flood Risk Model and FEMA.

Future Base Flood Elevation

The projected Base Flood Elevation (BFE, based on 1% annual chance of inundation in 2070 with 40" of sea level rise) varies throughout the site. Around the center of the Study Area, the BFE is 18' (with a few concentrated areas of 18.5'). Around the southern portion of the site, closer to Moakley Park, the BFE increases to 19.5 and 20'.

Figure 9-3 Future Base Flood Elevation

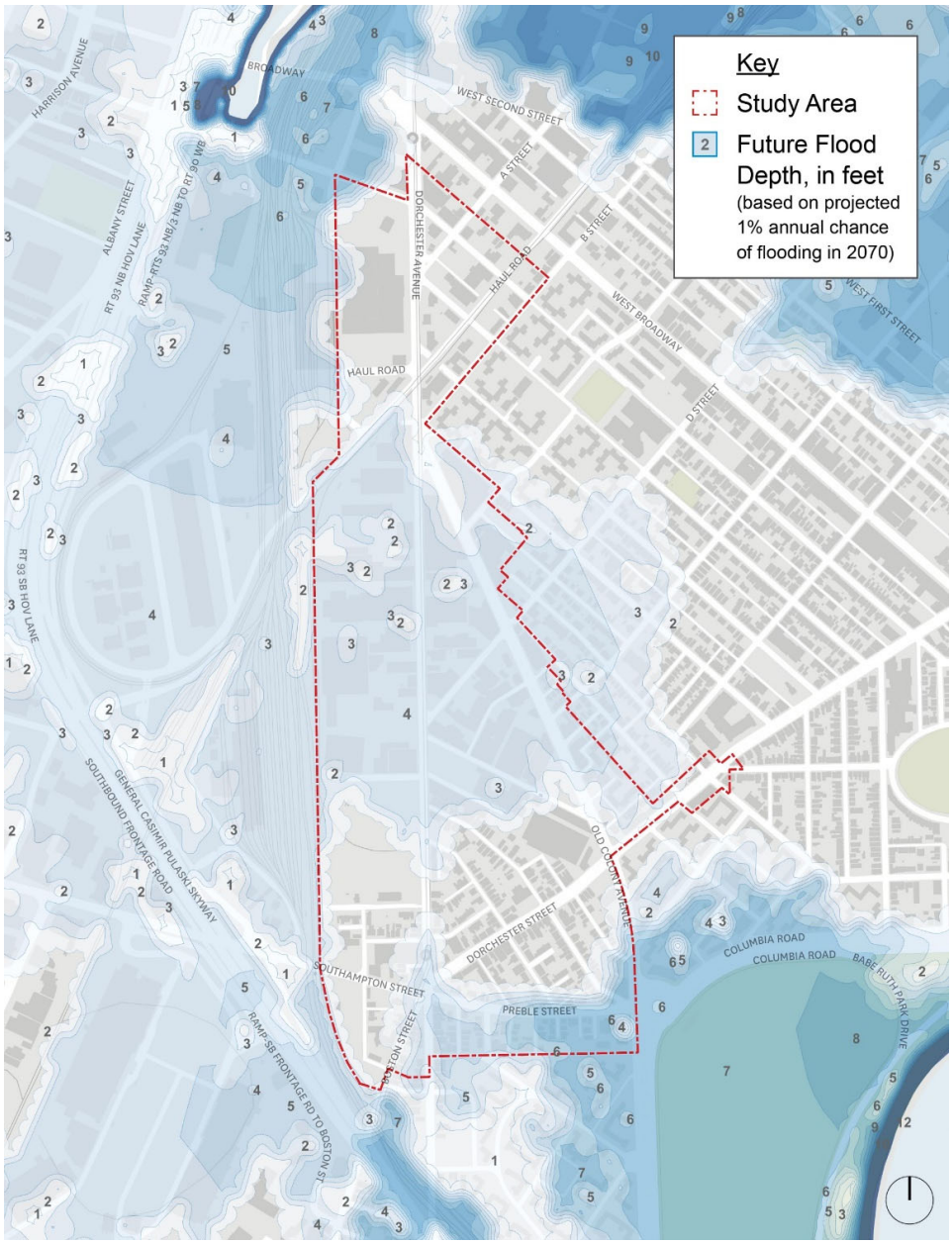


Source: Boston Harbor Flood Risk Model.

Future Flood Depth

This map represents the projected flood depth (based on 1% annual chance of inundation in 2070 with 40" of sea level rise) calculated by subtracting the existing ground elevation from the future Base Flood Elevation (Figure 9-4). A significant portion of the center of the Study Area is projected to flood by up to 4'. Additional flooding occurs at the intersection of Southampton and Dorchester Street.

Figure 9-4 Future Flood Depth



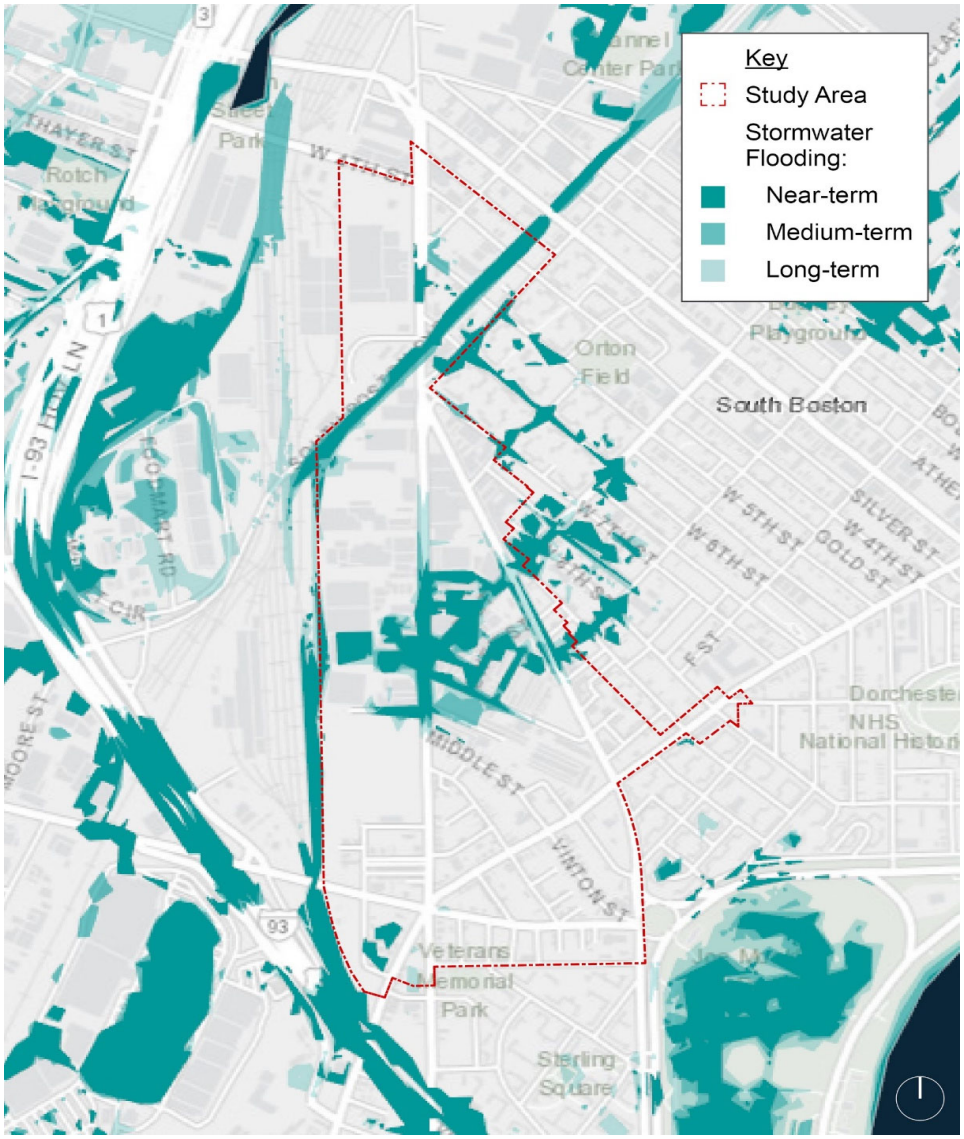
Source: 2013-2014 Sandy LIDAR tiles from MassGIS and Boston Harbor Flood Risk Model.

Stormwater Flooding

This map represents approximate stormwater flooding extents from a 10-year, 24-hour rainfall event under various climate conditions, combining future sea level rise and extreme precipitation (5.6-inch, 5.8-inch, and 6-inch rainfall).

Significant stormwater flooding occurs at the intersection of Dorchester Avenue, D Street, and Damrell Street. This flood-prone area is exacerbated by the future flood plain. Additional stormwater flooding occurs along the South Boston Bypass.

Figure 9-5 Stormwater Flooding

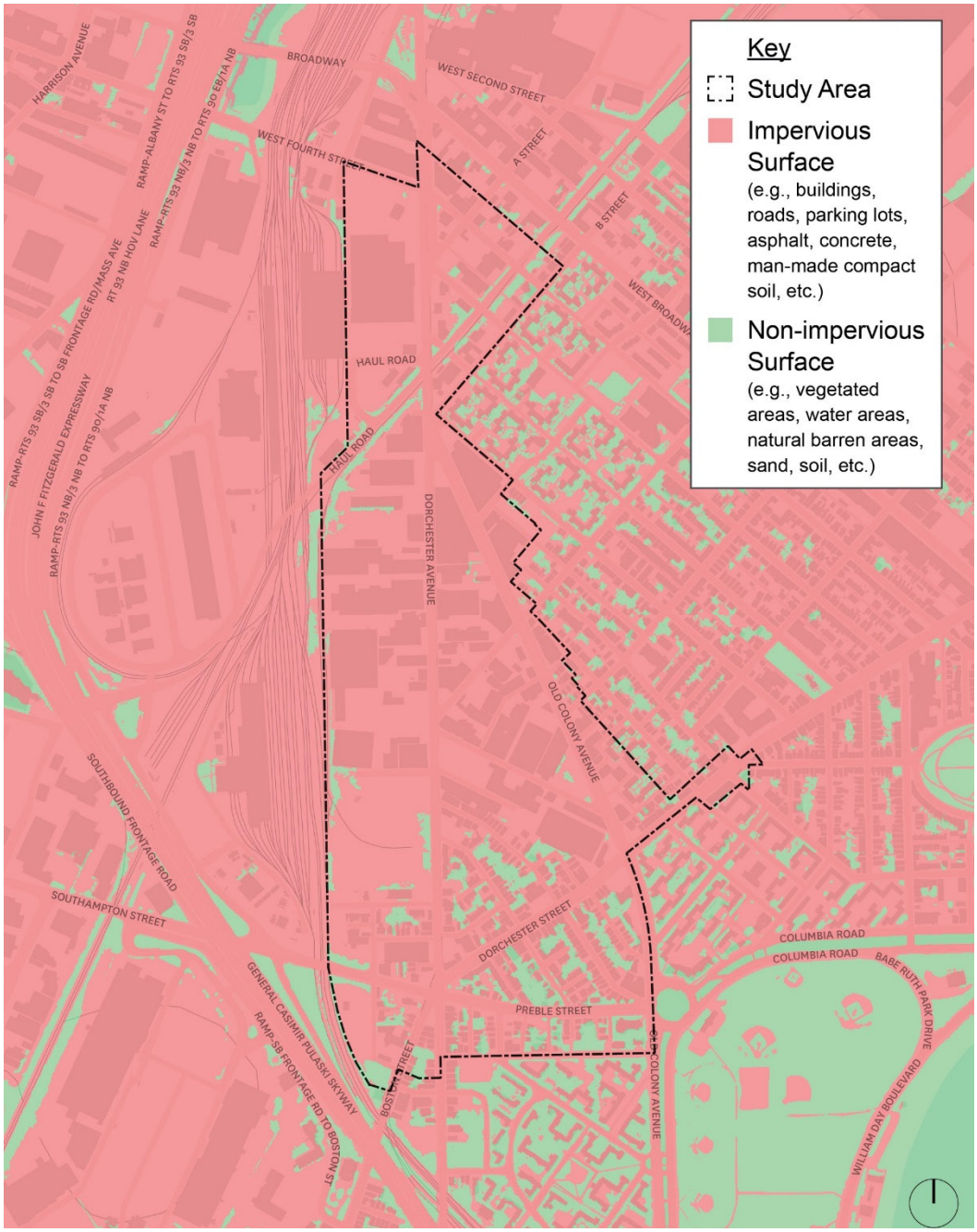


Source: Boston Water and Sewer Commission Wastewater Facilities Study.

Impervious Surface

As most of the Study Area is currently industrial in use, impervious surfaces cover the vast majority of the site. These surface types include buildings, roads, parking lots, concrete surfaces, man-made compacted soils, and other impervious surfaces.

Figure 9-6 Impervious Surface

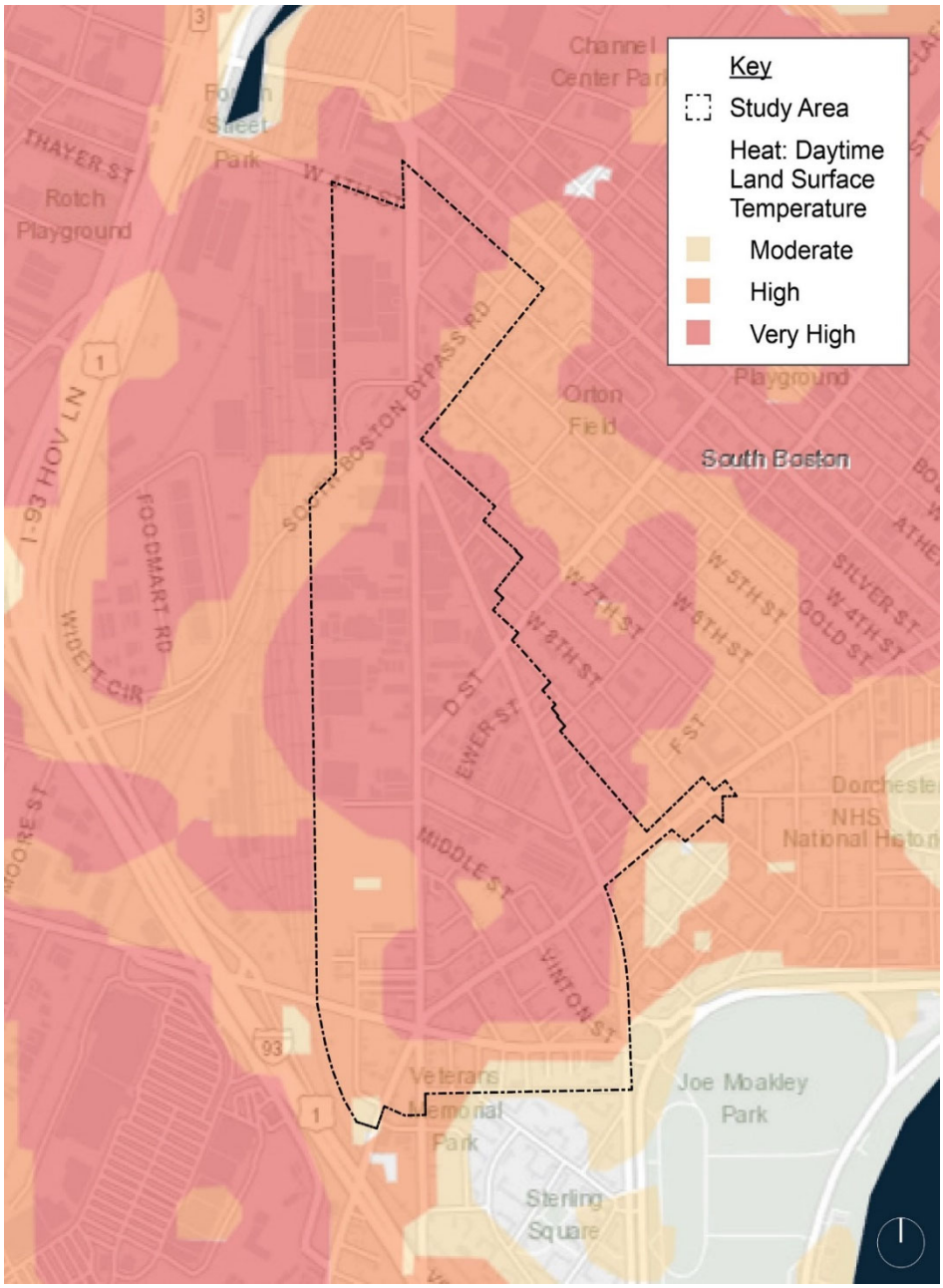


Source: MassGIS (Bureau of Geographic Information).

Heat Island Effect

This urban heat island hotspots map represents areas of the city with elevated land surface temperature (LST, as measured from July to August, 2015) averaging at least 1.25 degrees above the mean daily temperature using satellite imagery during the daytime and nighttime. As shown, a majority of the Study Area experiences high to very high daytime land surface temperatures. Elevated daytime temperature increases summer peak energy demand and can necessitate an extra 5-10% of energy use for cooling urban buildings during peak energy use periods, resulting in additional greenhouse gas emissions.

Figure 9-7 Heat Island Effect

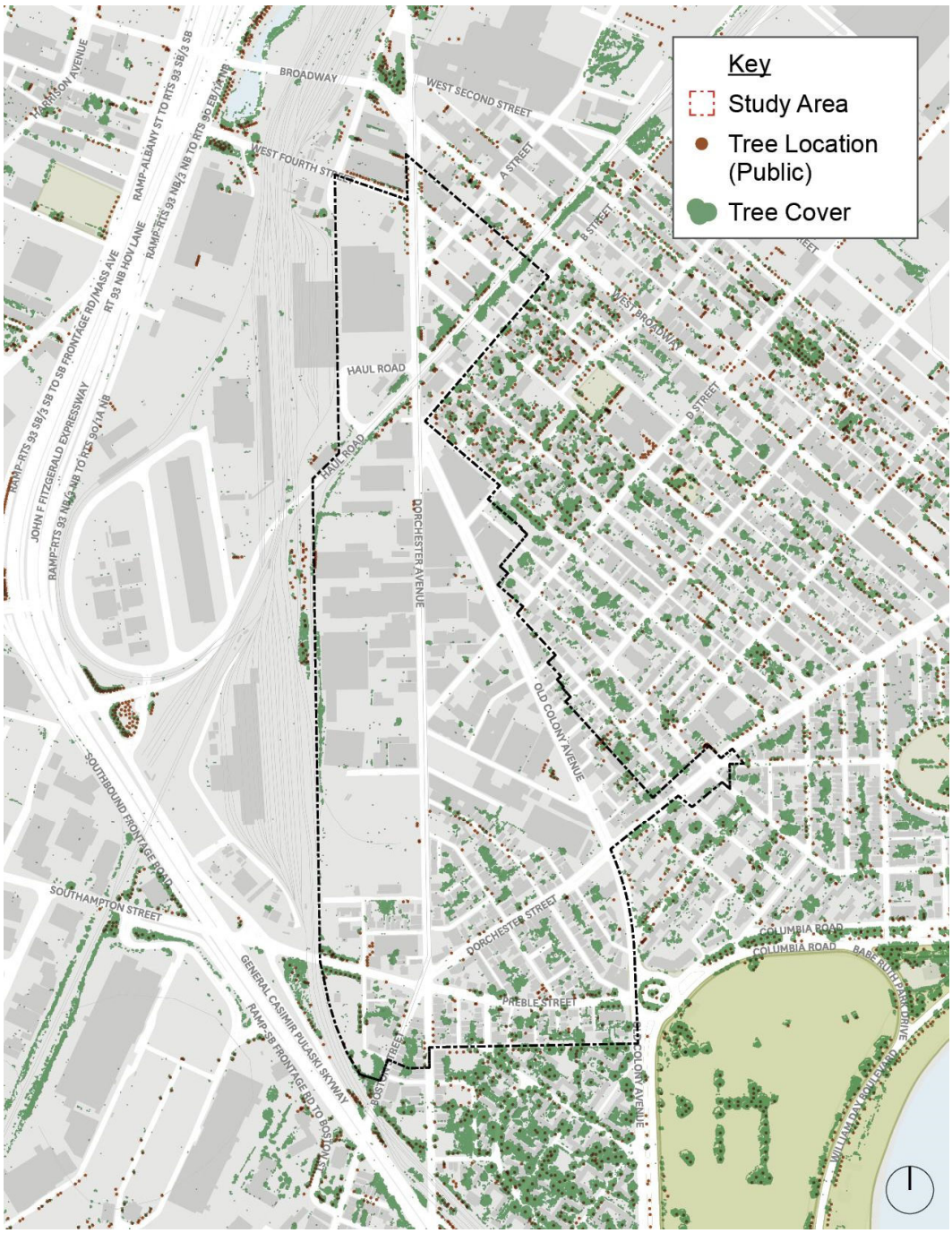


Source: Metropolitan Area Planning Council and the Trust for Public Land, using Landsat Land Surface Temperature derived with the LandSat TRS tools toolbox.

Tree Cover

Tree cover is largely the inverse of the impervious surface map; the Study Area is almost entirely devoid of vegetation.

Figure 9-8 Tree Cover

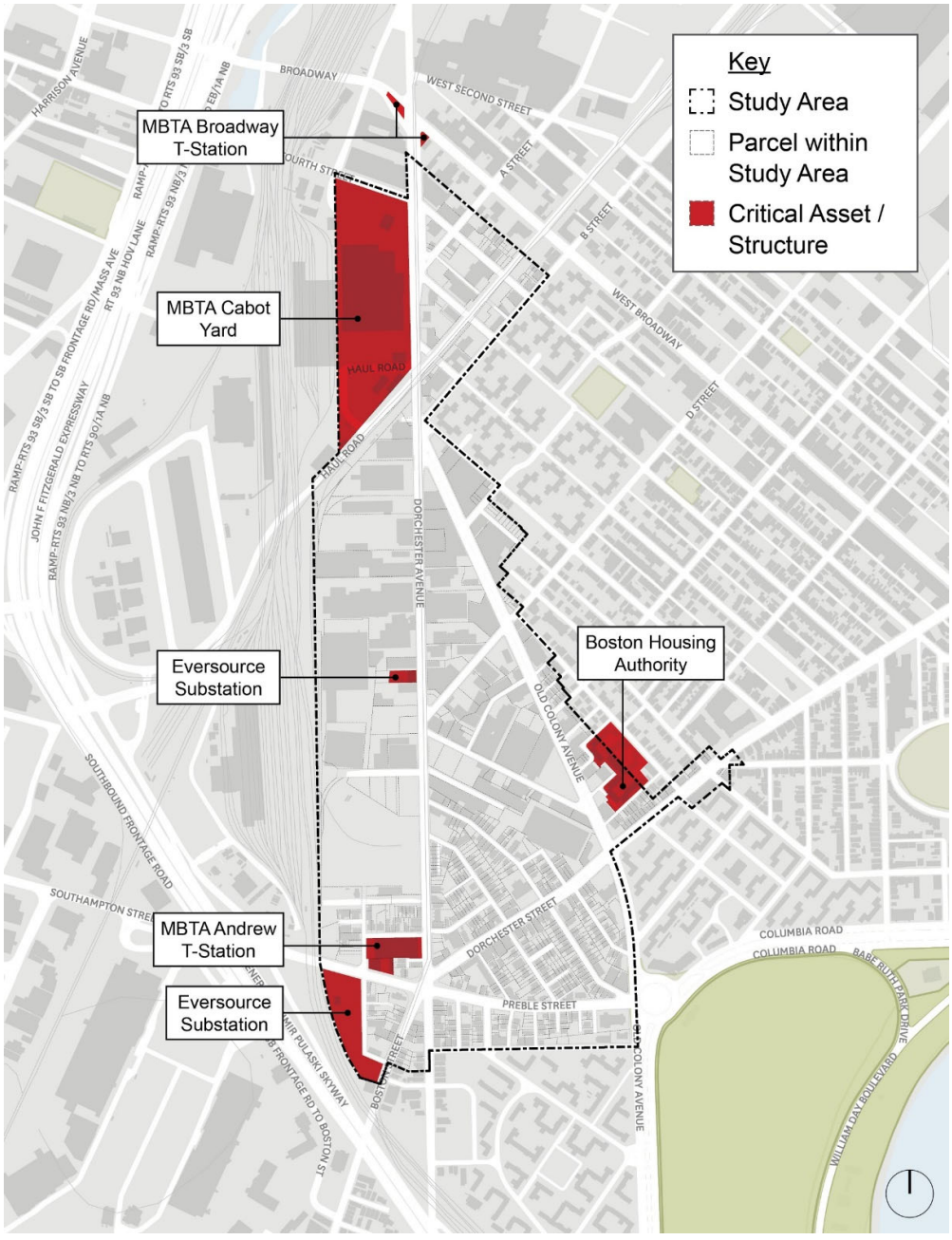


Source: gis.cityofboston.gov (2011) and Google Earth Aerial Imagery (2019).

CRITICAL ASSETS AND VULNERABILITIES

Critical assets and infrastructure in the Study Area include the MBTA Cabot Yard bus garage, the MBTA Broadway and Andrew Red Line stations, two Eversource substations (one located in a vulnerable flood-prone area), and a multi-family housing site owned by the Boston Housing Authority.

Figure 9-9 Critical Assets



Source: cityofboston.gov

10 Next Steps

This Existing Conditions report serves as a basis for future tasks as part of the PLAN: South Boston Dorchester Avenue Transportation Plan. The BPDA-led project team will refer back to Existing Conditions for a variety of purposes. These can include references to traffic volumes or roadway widths, transit capacity or crash histories. Because the Existing Conditions report provides a summary of deficiencies in the Study Area it is critically useful for serving as a basis for project evaluations, by giving the project team a sense of what issues project recommendations should resolve. The next steps for the study include:

- **Future conditions** – this upcoming effort begins where the Existing Conditions report leaves off, and forecasts what growth anticipated in the Study Area looks like on the existing transportation network. This effort will help the project team understand the scale of deficiencies that recommendations must address.
- **Evaluation framework** – created concurrent with Existing Conditions and slightly ahead of Future Conditions, the evaluation framework provides a set of goals, objectives, evaluation criteria, and metrics that will support the project team in understanding how well possible recommendations do in relation to addressing identified deficiencies.
- **Immediate recommendations** – also concurrent with the above, immediate recommendations are those operating and capital investments – focused on transit, pedestrian, bicycling, or multimodal – that make sense now, or within the short-term (0-5 year) timeframe.
- **Long-term recommendations** – long-term recommendations will be developed after the above items are completed, and will contain operating and capital investments (again, transit, pedestrian, bicycling, or multimodal) which best meet the objectives of the study over the long-term. The immediate and long-term recommendations serve as the basis for the final report.

Public outreach will be important both to confirm the findings from the existing and future conditions, as well as to seek feedback on draft recommendations. We look forward to working with you as we move through these next steps. For more information please contact Mark McGonagle at Mark.McGonagle@boston.gov.

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development agency